

AMERICAN FORESTS

JUNE 1950

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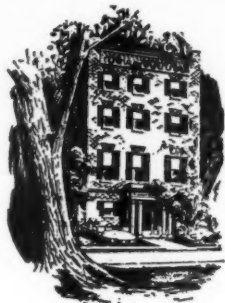
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The American Forestry Association is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

FORESTS

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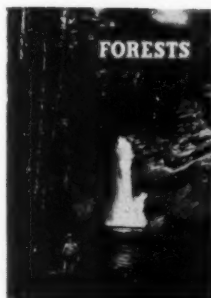
JAMES FISHER
Art Director

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THE COVER

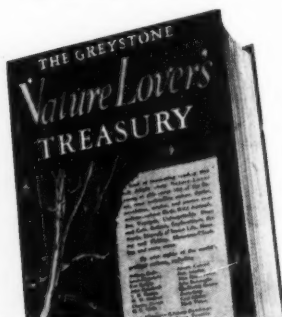
This deep, clear pool at the foot of Trick Falls on Two Medicine Creek in Glacier National Park is the kind of setting avid trout fishermen dream about. In this John Kabel photo, it's easy to imagine a rainbow, eastern brook, or cutthroat trout lurking below the surface, ready to strike at the angler's lure. June is the month vacationing tourists begin invading this northwestern Montana beauty spot in large numbers, although the park is open to motorist travel by mid-May. The fishing season coincides with the State of Montana opening date and closes October 15. No fishing license is required within the park, but anglers are governed by park regulations. Glacier National Park is the United States section of the Waterton-Glacier International Peace Park established jointly with Canada in 1932.

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LETTERS TO THE EDITOR

In Defense of Mr. Burch

After noting Dr. John W. S. Brady's letter in your April issue, I again reviewed the November, 1949, issue and Guy Irving Burch's article, "Conservation and Population."

I was particularly interested because of the recent reported statement by Professor Juitsu Kitaoka, population student of Japan: "The overcrowded condition of Japan was the basic reason that took my nation to war." He points out that Japan now has 82,603,000 people trying to make a living on an area smaller than New York and Pennsylvania, with a combined population of but 21,778,870.

Such population concentrations are dependent upon natural resources elsewhere, resources which are not in surplus as populations increase locally.

The statements of Mr. Burch become realistic when one sees large families in dire circumstances mining the soil from cutover timberlands.

Are intelligent Americans going to sit by and let ill-advised wars provide the wrong solutions to the population-resource ratio? More thought-provoking articles about the real basic problems of conservation are needed if world chaos is to be avoided.

M. C. Howard

Hot Springs, Arkansas

It may be presumed that Dr. Brady, whose letter appears in your April issue, is well informed about pills and serums. One cannot say as much for his intellectual relationship to economics and the problems of resource utilization. He has obviously made no study of these subjects, or even done any objective thinking about them. Yet he does not hesitate to describe as "trash" the reasoned statements of a highly trained specialist who has devoted his life to such studies. Dr. Brady would surely be either indignant or amused if his own medical diagnoses were to be dismissed as "trash" by Mr. Burch. The parallel is obvious.

It is an elementary fact of economics that the size of the population of any region is a major factor in determining the standard of living of that region. This may be "odious and immoral" to Dr. Brady, but it remains a fact, and as such is quite unaffected by personal prejudices and parroted opinions. Mr. Burch has justifiably used it as a basis for reasoned conclusions. Dr. Brady, in contrast, explodes in an emotional outburst having little or no relation to the fundamental problem. The only accurate and relevant statement in his tirade is the assertion that population control means birth control. Well, why shouldn't it?

The difference between Mr. Burch and Dr. Brady is the difference between objective analysis and mere shouting. Dr. Brady should stick to his pills.

Malcolm H. Bissell

Calistoga, California

The Seaboard Story

The article "A Railroad Crusades for Forestry," by James B. Craig, in the February issue of *American Forests*, is splendid and should do much to increase interest

in the forests of Georgia and other southern states.

Herman Talmadge
Governor of Georgia

Atlanta, Georgia

"Who Owns Our Rivers?"

I note in your May issue the article, "What You Should Know About CVA." The whole article gives a seriously false impression of the effort to establish the Columbia Valley Authority and has some positive misstatements, as well as some slurs at the sponsors of the CVA. I will mention one misstatement which I know is positively false:

In the first column on page 17 you say, "cutover lands are being sought eagerly by prospective buyers." They are not being sought so eagerly. Prospective buyers do come to look over the cutover lands, but when they find out the facts they turn around and go elsewhere. The facts are these:

The cost of clearing that cutover land is \$200 an acre. Then buildings and fences must be put on the land at the cost of above \$50 an acre. There are many farms to be had in the Mississippi Valley at less price. More than this, a large part of the cutover lands of the Pacific Coast is infested with ferns, which means a ten to twenty-year fight to bring the land into real productivity.

The real fight is whether we of the Pacific Northwest shall pay perpetual tribute to eastern capitalists for the use of electricity, or may have its facilities at approximately the cost of production. The same struggle has been going on in this country for 200 years.

First, should we pay tribute to England instead of producing our own commodities. Two wars settled that question. Then should we pay taxes to maintain public schools. Next the question of chattel slavery bothered the nation. Later on the matter of forest preservation by the federal government had a lot of opposition. Now we have the question of whether the people shall have the benefit of the public waters, or a few "investors" shall levy perpetual tribute on the public at large for letting the rivers flow.

I recall hearing a discussion when I was a boy as to whether Wells Fargo or the federal government should carry our mails. Seventy-five years hence some old man may recall hearing a discussion in 1950 as to who owns our rivers.

C. E. Payne

Usk, Washington

Reprint Credit

American Forests regrets its failure to credit *Nation's Business* for the map used on page 14 and 15 of the May issue, in connection with the article, "What You Should Know About CVA." We are glad to give credit to *Nation's Business* for this map which appeared in its October 1949 issue.

WISCONSIN USES SEAMAN MOTORIZED ROTARY TILLER IN CLEARING LAND OF HEAVY BRUSH

In the Douglas County Grouse Management Area the Wisconsin Conservation Commission is using a SEAMAN Rotary Tiller (Motorized and 5 ft. in tillage width) to clear land of brush and to till for the planting of aspen, willow, hazel brush and jack-pine. Here's an excerpt from the story given in the Wisconsin Wildlife Research Quarterly Progress Reports, October, 1949:

"A 60-inch Seaman Rotary Tiller, manufactured by the Seaman Motors Corporation, Milwaukee, Wisconsin, was rented for three weeks and used to clear willow, hazel and small aspen brush in the 1948 spring experimental burn area. This machine, which pulverizes and mixes the brush with topsoil, was capable of chewing up green aspen two to three inches in diameter with one tilling. This is quite heavy going, however, and the machine is most efficient on dense stands of willow, hazel, and very young aspen. Cross-

tilling increases the degree of woody plant destruction.

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MY FAVORITE TREE

BY DR. KARL MENNINGER

Famous Psychiatrist



LIKE MANY of the previous contributors to this series I feel uncomfortable about naming one favorite from among the many trees I know. I shall feel guilty of a certain disloyalty and unfairness which my friends, the trees, might resent. Trees seem very human to me, not in some fanciful way but in a deeply emotional way. I speak with some diffidence of this emotion because I perceive that there is a wide variance among people with regard to such a feeling. To see a tree chopped down for utilitarian purposes, valuable as these may be, pains me sharply, to the astonishment of some of my friends. The sight of the felling of great trees, which seems to thrill the average movie audience, arouses in me only the most unpleasant sensations, similar to those more conventionally experienced when the hero of a story finally loses his life. Journeys I took some years ago through parts of the states of Oregon, Washington and the upper peninsula of Michigan left me depressed for weeks: inconsiderate destructiveness as a trait of human beings seemed too nakedly revealed.

As a psychiatrist I am interested in the way people (including myself) feel about things. Reactions such as I have described can be called by different names—sentimentalism, neuroticism, pantheism, totemism, identification. They are bound to be ridiculed by the practical man who regards trees only as so much lumber from which so many useful things can be made. But when I think of the destruction of the top soil and the devastation of floods which have followed so regularly the application of this "practical" principle, I wonder if it isn't in part an illusion and in part an excuse for cupidity. Recently

one of my neighbors—a very "practical" man—cut down a beautiful walnut tree and transformed it into boards for a corral for his horses. I asked him about it, because he is intelligent and approachable. He was astonished that I concerned myself. "A tree is a tree," he said.

Having this deeply emotional reaction toward trees, I cannot name a favorite tree. Instead I shall mention several which are especially endeared to me, but in different ways. The sycamore has always impressed me with its grandeur and its uniqueness. The massiveness of its trunk and the majestic sweep of its branches give this tree a truly grand architecture, unsurpassed by any other tree. The sycamore is also one of my oldest acquaintances among the trees, for its spectacular, dappled branches and white trunk, and the round seed pods swinging from its branches all through the winter stamped its identity upon my mind during early school days.

Of the less common trees the yellowwood is one of my favorites, producing quite different emotional reactions of an aesthetic sort. Its smooth clean bark, the airy grace of its foliage and its occasional display of fragrant white flowers combine to create an effect of delicate beauty. Although it is a hardy, little wild tree, it attains its richest beauty of foliage and flowers only under cultivation—a circumstance which is particularly gratifying to the cultivator of trees.

And of the common trees I love the cottonwood because, like we Kansans who have named it the official tree of our state, it withstands both adversity and prosperity. To the thousands who live on the great prairies of the Southwest, the groves of cottonwoods

(Turn to page 39)

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Grand Canyon of the East

THE Genesee River, one of the few important rivers in America which flow north, rises in the meadows of northern Pennsylvania and, after a circuitous course, empties into Lake Ontario. Formerly more tempestuous than it is now, it has been wearing its way through glacial deposits for thousands of years. In western New York it suddenly drops 700 feet in a series of three magnificent falls, carving out

By **MARGARET I. JARDINE**

a gorge about seventeen miles long. The precipitous walls of the gorge, with the winding river below, has earned for it the name of "Grand Canyon of the East."

Entirely within Letchworth State Park, sixty miles from Buffalo, the gorge offers one of the most notable examples of waterfall scenery in the eastern states. But competing with it

for public interest and enjoyment is the 10,600-acre park itself. Few parks have such diversified recreational facilities; few are so steeped in history. And for the nature lover, Letchworth is a veritable paradise.

For outdoor sports enthusiasts there is everything from an archery range to ski slopes. Below the lower falls is a swimming pool and bathhouse. There is a fine museum of Indian and pioneer exhibits—a com-

The great gorge of the Genesee in Letchworth State Park is one of the show places of western New York — a veritable Eden of water, trees and bird life

the Genesee River Gorge one afternoon, he was dismayed to find that the tall, stately pines in the valley below were being logged. A sawmill had been erected at the middle falls, and more than 200 acres of majestic trees already had fallen before the ax. On the spot he made a resolve. If humanly possible, he would save this beautiful valley from despoilation.

And it was possible. In time, Dr. Letchworth succeeded in purchasing the land that lies in hillside, plateau and meadow along one bank of the river, commanding a magnificent view of the upper and lower falls. It was here he built his home, Glen Iris, (now the Glen Iris Inn) so named because of the colors that arose each sunny day from the mist of the falls.

The nucleus of the present park was bequeathed to the state in 1906, with the stipulation that the American Scenic and Historic Preservation Society be its custodian. But before his death, Dr. Letchworth made many contributions to the future of the area, including the planting of more than 10,000 trees in an informal manner that created natural effects.

Indeed, next to the magnificent

gorge with its three waterfalls, trees are perhaps the stellar attraction at Letchworth. As early as 1912, work was started on the forest arboretum, the aim being to create a sort of outdoor laboratory for the study of timber trees that thrive in this northern climate. More than 100 thousand trees were planted the first year on a fifty-acre tract—pine, fir, larch and spruce, along with numerous deciduous trees. Plantings were in both pure and mixed stands, or blocks, varying in size from one to several acres. The trees were grown at the arboretum nursery and, up until this year, more than 600 thousand seedlings had been transplanted from nursery to field. So important to the scientific practice of forestry have these plantations become, students from forestry schools throughout the East visit them every year.

But to the layman, the main appeal is the plant associations found in the woodland, along the stream banks, in the swampy areas and along the limestone cliffs. There is nothing more exciting to the hobbyist than to come upon some plant that will serve as a "key" to a whole association or community. This, as the writer can testify, is what makes ecology such

plete record of colonial history in the region. There are log cabins—some original Indian cabins—for visitors who like to rough it; there is the stately Glen Iris Inn, with its outstanding collection of antiques, for those desiring convenience and comfort. For those who would get closer to nature, there are good trails through the woodland and along the river; there are plant communities of unusual interest, a great variety of tree associations with their lesser plant life. And there is an extensive forest arboretum which attracts students from forestry schools throughout the Northeast.

What Letchworth Park is today was but an idea in the mind of Dr. William Pryor Letchworth of Buffalo, back in 1859. Crossing the railroad bridge connecting the two sides of



Glen Iris, original home of William Pryor Letchworth, commands a magnificent view of the upper and lower falls. It is now an inn

Photos by Bassett Art Shop

a fascinating study and recreation.

And Letchworth is a paradise in this respect. For example, in one plant community consisting of white oak, sugar maple, white ash, hickories and tuliptree, the cucumber tree (a magnolia) is found. This is its northern limit. The black spruce, often with pendulous branches, is found in the swamp community. Associated with it are the pin oak, American larch, swamp maple and sometimes the box elder.

other ferns give the finishing touch, with their light airy lacework patterns.

The hemlock ravine holds some of nature's choicest gems. The mountain and striped maples, birches, flowering dogwood, and tuliptree help to make up this community. Many delicate plants grow here, as the bishop's cap, coral bells, bunchberries and wild ginger.

But its real charm is in the carpet of delicate ferns. The polypods lux-

may be pulled up in sheets.

The oak woods are quite different, with each plant group forming a "story," or different level. This association prefers acid soil and mulch. Here may be found dogwoods, sassafras and basswood. The shadbush, laurel and blueberry also inhabit these deep, rich woods. Of the smaller plants are found hepaticas, showy orchis, polygala, violets, and many ferns including spleenworts, Christmas ferns and shield ferns. It is almost impossible to describe the beauty and charm found in the oak woods at Letchworth.

For those interested in history, Letchworth has much to offer.

Here are original Indian cabins, a council house, and the statue of Mary Jemison, the "White Woman of the Genesee." Her's is an interesting story. At the age of fifteen, Mary was captured and adopted by the Seneca Indians, who ranged in New York between Seneca Lake and the Genesee River, where Letchworth Park now stands. After Mary grew up she was married, and happily, to a Delaware Indian chief. But when he died, leaving her with a small son, she moved back into the Genesee Valley with her Indian sisters and brothers.

The wars were now over, and England was offering a bounty to the Indians for the return of white prisoners. An old chief, spurred by this offer, decided to kidnap Mary and return her to the whites. But the Indians had treated Mary kindly and she had no wish to leave. So until the old chief wearied of his search, Mary and her son were in hiding near the "White Woman's Spring."

Wildlife is abundant at Letchworth. Hundreds of mulberries have been planted for the birds, providing food for four months of the year. Also blue-berried juniper on the open hillsides which attract as many as thirty-nine species, among them the flicker, cedar wax-wing and purple finch. The crossbills and grosbeaks are cone eaters and patronize the hemlocks, firs and larches, as well as the pines and spruces. The flowering dogwood leads them all, however, by providing food for no less than eighty-six species. These are but a few of the plants that make Letchworth a paradise for both birds and ornithologists.

But it is more than that. The "Grand Canyon of the East," as it has become known, is an unfailing well-spring of inspiration, of mental and physical relaxation, of knowledge that can be gained only by close contact with nature at her best.



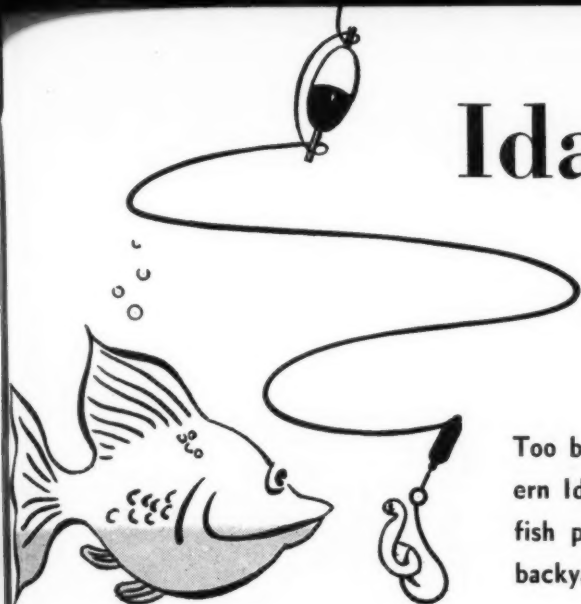
Middle Falls. From the railroad bridge in background, Dr. Letchworth watched sawmill operate, resolved to preserve valley's great beauty

An interesting shrub that also loves marshy ground at Letchworth is the leatherwood, a slow growing, shapely shrub of about six feet with pale yellow flowers in the early spring. Its brown stems diverge near the ground into many curved and ascending branches—branches so tough and flexible that the Indians bent them into hoops.

Another tree association at Letchworth is the beech-maple-hemlock. Its companions include the shadblow, witch-hazel, mountain laurel and Canada yew. Lady's slippers, trilliums and many kinds of violets live happily among them. The maiden-hair, spleenworts, Christmas and

uriate on the tops of rocks, the cliff and rock brakes in niches on the sides of the cliffs, with bladder ferns clinging to wet rocks. The dainty woodsias grow here, too.

Perhaps the most interesting and rare fern found at Letchworth is the walking fern (*Camptosorus rhizophyllus*). Only eight inches high, it is found mostly in limestone cliffs. Its evergreen leaves, sometimes two feet in length, taper at the end, and when they arch over and touch the ground, they take root and send up another colony. On a narrow ledge, the leaves cross and intercross as they "walk." In other areas they will form large interwoven mats that



Idaho Fish Pond

Too busy to go fishing, northern Idaho farmers are building fish ponds right in their own backyards. And it's working



WHEN northern Idaho farmers build fish ponds on their property, it is "man bites dog" news. These people are close to some of the finest fishing waters in the country. Branches of the St. Joe and Clearwater rivers are only slightly less famous for excellent angling than Lake Pend Oreille, perhaps the nation's best fishing hole.

One answer to this paradox is that Idaho farmers are too busy these days. Gone are the years when opening day of trout season saw scores of local sons-of-the-soil wetting lines and hauling in fish. Another reason is that they have found a farm fish pond an ideal substitute for leisurely trips afield.

Everybody is anxious to help in the new program. Men of the state fish and game department, University

By **BOB FORBES**

of Idaho department of zoology, and soil conservation districts have rolled up their sleeves. And they have made a good start. Two hundred and fifty ponds are now full of water—and fish. Four hundred are back-ordered.

Homer S. Swingle of the Alabama Agricultural Experiment Station, co-author of a widely read *Management of Farm Fish Ponds*, calls northern Idaho ponds "The best constructed ponds in the country."

Taking a large share of this pat on the back is Lewis Wakefield, Soil Conservation Service engineer at Lewiston. But district workers also come in for a share of praise.

State fish men enter the picture when ponds are full of water. They calculate the carrying capacity of each and then plant fish of several

varieties — bass, crappies, bluegills and "punkin seed" sunfish.

But fish production is not the only benefit of ponds on Idaho farms. They provide watering places for livestock; and highly important is the fact that ponds help maintain the sub-surface water table. Some authorities think that enough farm ponds in a large area will forestall the time when it runs out of ground water.

When fertilized, ponds in the East have been known to yield as high as 100 pounds of fish per surface acre of water. However, Douglas Hole, district conservationist at Lewiston, says, "The problem of fish pond management here is to give ponds enough use. Almost any northern Idaho pond would produce twice as heavily, without fertilization, if its potential was realized by more fishing."

This typical northern Idaho fish pond is in Latah County. Pond fertilization is unnecessary



WE RE-EXAMINE OUR FIRE DOLLAR

Basic protection is near for state and private lands, Forest Service study reveals, but the job will now cost \$48,000,000, or three cents more an acre

1950 AREA AND COST ESTIMATES

State	Areas Qualifying for Protection (In Acres)	Estimated Cost of Protection
Alabama	18,112,000	\$2,249,000
Arkansas	16,962,000	1,589,000
California	19,500,000	6,609,000
Colorado	7,475,000	97,000
Connecticut	1,907,000	240,000
Delaware	440,000	27,000
Florida	19,940,000	3,436,000
Georgia	19,968,000	2,425,000
Hawaii	1,735,000	9,000
Idaho	6,963,000	850,000
Illinois	3,755,000	133,000
Indiana	4,255,000	215,000
Iowa	1,968,000	76,000
Kentucky	11,253,000	651,000
Louisiana	14,141,000	1,451,000
Maine	16,692,000	952,000
Maryland	2,686,000	350,000
Massachusetts	3,293,000	440,000
Michigan	17,124,000	1,926,000
Minnesota	17,996,000	1,688,000
Mississippi	15,314,000	1,676,000
Missouri	13,835,000	1,150,000
Montana	6,000,000	460,000
Nevada	2,150,000	79,000
New Hampshire	4,176,000	243,000
New Jersey	2,294,000	375,000
New Mexico	4,060,000	88,000
New York	13,423,000	1,022,000
North Carolina	16,920,000	1,882,000
North Dakota	919,000	8,000
Ohio	4,973,000	281,000
Oklahoma	9,779,000	608,000
Oregon	11,995,000	3,165,000
Pennsylvania	14,659,000	919,000
Rhode Island	452,000	86,000
South Carolina	11,300,000	1,353,000
South Dakota	896,000	50,000
Tennessee	11,967,000	1,141,000
Texas	14,707,000	1,350,000
Utah	5,721,000	131,000
Vermont	3,504,000	110,000
Virginia	12,971,000	1,297,000
Washington	12,329,000	3,122,000
West Virginia	9,038,000	665,000
Wisconsin	15,590,000	1,534,000
Wyoming	1,557,000	42,000
Total	426,694,000	\$48,250,000

CAN this nation achieve a safe degree of fire protection for its forests and critical watershed lands? And at what cost?

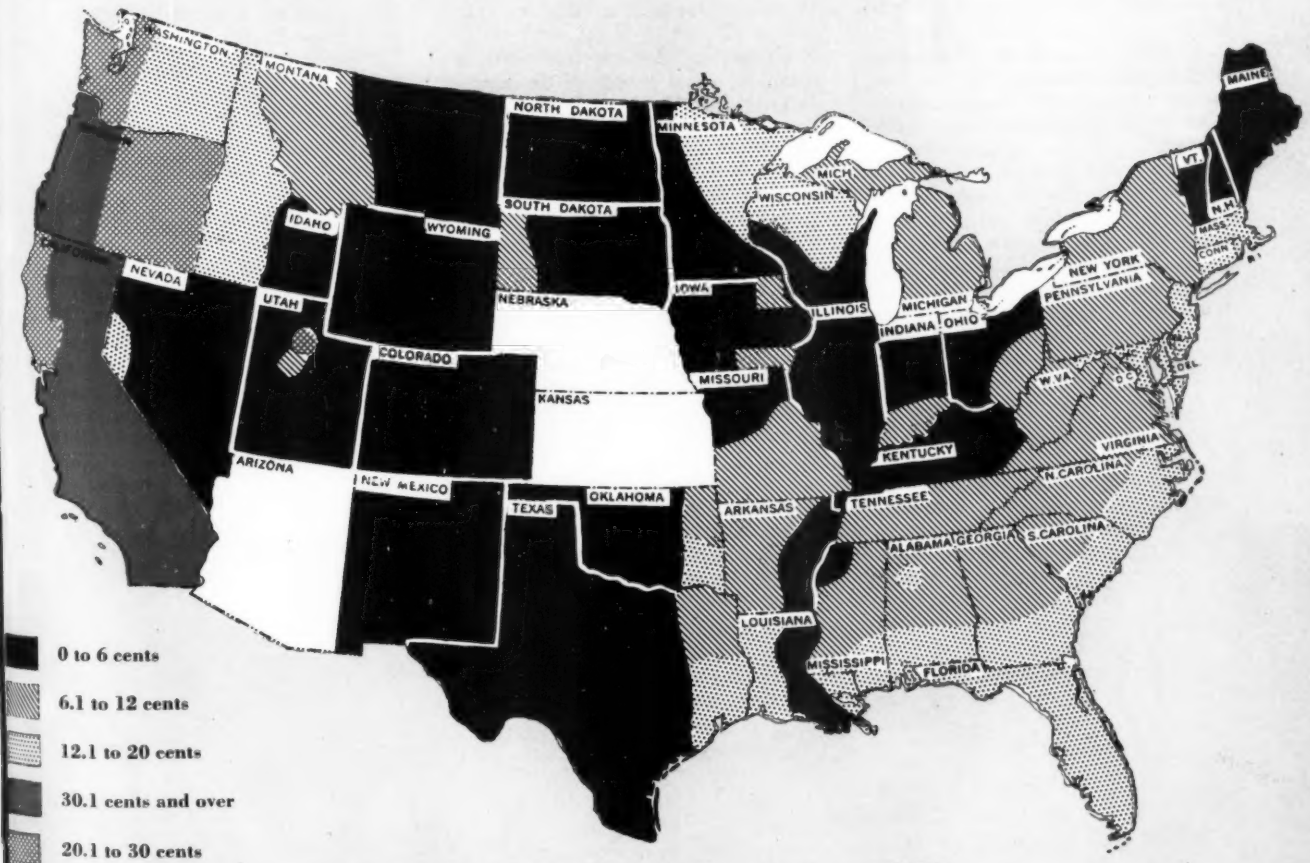
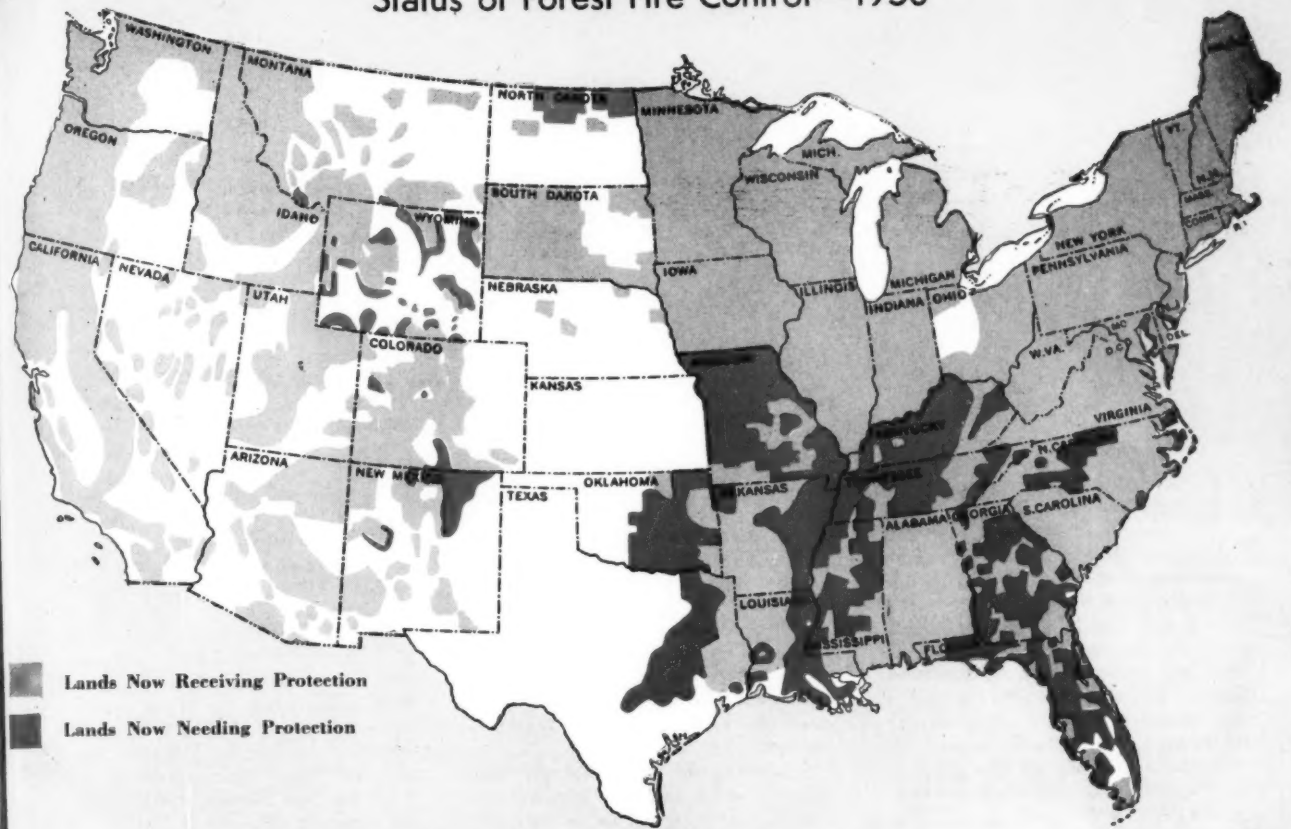
These are vital questions, for the first essential of forestry is adequate protection. But they are not quickly answered. What, for example, constitutes adequacy—a safe degree—in fire protection? How many burned acres can this country absorb without serious disruption to its forest economy?—without further endangering its dwindling water supply?—without severe inroads on recreational opportunities for its citizens?

We are not far enough along in fireproofing our woodlands to say for sure. We have yet to master the intricate problem of varying degrees of local dependency upon forest areas, along with such factors as changing climatic conditions, extent and character of land use and, in many regions, human behavior. But we are well on our way.

This is clearly indicated in a recent study made by the U. S. Forest Service of private and state forests and critical watershed lands qualifying for cooperative federal-state protection under the Clarke-McNary Act (practically all lands outside of federal ownership) and costs of providing these lands with "basic" protection. With forty-three states and many industrial foresters cooperating, this study is unquestionably the most comprehensive made in recent years. Its basic purpose is to achieve a more realistic disposition of funds under the Clarke-McNary pattern—that is, with the federal government providing funds to the states on a matching basis.

The story of this area-cost study is told quite graphically in the table and
(Turn to page 44)

Status of Forest Fire Control—1950



Protection Cost Rates Per Acre—1950

How Many Elk?

By GRACE V. SHARRITT

Fears that the famous Jackson Hole elk herd is declining are quieted by winter census takers, who report 16,000 animals, an increase over 1945

THE elk were strung out in a gigantic circle waiting to be fed on the National Elk Refuge at Jackson Hole, Wyoming. There were thousands of them: big, powerful bulls, sleek dun-colored cows, fat calves and yearlings, although their exact number was still a guess. This brilliant winter morning, however, was to determine the herd's status in the valley. For this was the day of the much-anticipated elk count.

Rumors had been running rife that the herd was on the decline. Old-timers declared it was dying out, that hunting pressure had been too great on the animals concentrated in this mountain valley of northwest Wyoming—a valley less than sixty miles long and eight miles wide. Because of its rugged inaccessibility, this valley had become the last remaining home of the great herds of elk which once roamed throughout North America.

Other big game throughout the state, notably antelope and deer, had suffered intensely during the hard winter of 1949. What about the Jackson Hole elk? Were the losses large,

or as some argued, normal?

That was the big question debated in game meetings, in homes and in public gathering places. Some would cite the slaughter of animals in 1947, when the elk had been caught by early snow storms along their ancient migrating trails from their summer range in the Yellowstone region to the National Elk Refuge, and shot down in a firing line by ruthless hunters.

Others would state that the elk-numbers were holding, arguing the case of the herd versus its range—that good game management had kept the population balanced in proportion to its natural habitat.

About every three or four years, a complete aerial census of the entire Jackson Hole herd is made by the U. S. Forest Service and the Wyoming State Game Department, in addition to the annual poll on the government elk refuge by team and sleigh.

The 1949 census was now in process and, for three days, a Forest Service six-passenger plane had counted

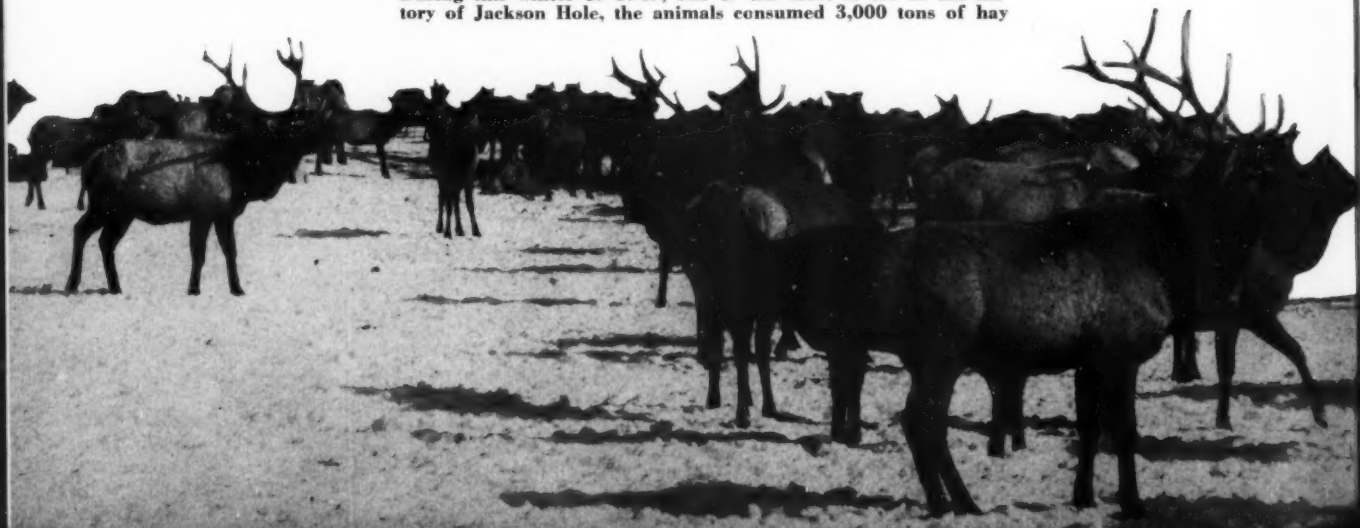
and re-checked the number of elk on the outlying winter ranges; over the Gros Ventre foothills, the Snake River Canyon and the Hoback Basin. This is hazardous, dangerous country. On the last poll of the elk by plane in 1945, Orange Olson, of the U. S. Forest Service, and Pilot Johnson, a seasoned mountain flyer, had been killed when the plane crashed.

On the ground, sixteen men, representing government and state agencies, the Izaak Walton League, and local business houses, were making the count of animals on the 25,000-acre government ranch or refuge, established in 1912 for the care and winter feeding of the largest elk herd in the world.

"Not a bad-looking bunch," remarked one, as he climbed aboard the hayrack of a sled which was taking the counters into the field. "Especially after this son-of-a-gun of a winter."

The men began pairing off—eight men to a sled. The count of elk in the lower feeding grounds was to be made in the morning, the upper feeding grounds in the afternoon.

Nine thousand elk were counted on the refuge feeding grounds. During this winter of 1949, one of the most severe in the history of Jackson Hole, the animals consumed 3,000 tons of hay



It had been roughly estimated that about 7000 elk were in refuge this winter and about 15,000 in the entire Jackson Hole country, including the refuge elk.

"There's an old cow that's been comin' to this feeding ground for years," one of the counters said.

"How can you tell?" someone wanted to know.

"Her ears are different. They've been marked. I've seen her each year."

"How many years you been counting elk?" he was asked.

"Fifteen, twenty," the old-timer drawled. "Beginning to feel like one."

The men laughed. Some of them were laying good natured bets as to what the count would be. "I say 3700 in this field," called one.

"Closer to 4500," replied another.

"Let's find out," a voice cut in.

"Here, Doug, you and Albert count the herd from this sleigh. Charlie and Everton take the bulls. Art and Jensen, the calves. Billy, you and I will count the spikes."

The two bobsleds started at a half-way mark in the circle, each sleigh going in opposite directions, to meet again at their starting point. Thus there would be no duplications of count.

The teams traveled slowly through the feeding elk, and the animals (which become semi-domesticated during the winter but revert to the wild as soon as they leave the refuge in the spring) broke to make a path for them. Then they casually returned to munching hay. Nothing was done to excite the herd, for if the elk should become alarmed, it would upset the count.

This was a scene that thrilled even the oldest of game men. Above the wide, snow-covered field, backed by the slopes of buttes and the dramatic Teton Peaks, magpies flashed vivid black and white feathered alarms, while ravens flapped slow, deliberate wings around the huge circle of feeding animals. The deep winter silence and cold temperature accented the movements of elk, horses and sleighs.

A bobsled stopped and the herd broke slowly, easily passing back of the counting men. The frost-coated horses snorted. A calf squealed in fancied fear. The old bulls acted as though they had been through the experience before—"and that men were funny critters, one day pitching hay to them, another time pointing a gun."

A cow limped past, a memento of



U. S. Forest Service photo

The plane used in the aerial count of the Jackson Hole herd. Almer Nelson, elk refuge manager, is shown at extreme right

a mis-aimed shot of last hunting season. "Haven't seen many cripples," one of the men remarked.

"Been many sick ones?" another questioned.

"Not this winter," Almer Nelson manager of the refuge, replied. "During the worst of last month's blizzards, when the elk huddled and crowded together in the swamp, some of the bulls gored a few calves. But on the whole, the herd is in excellent condition."

"How much hay they been getting?"

"An average of thirty-one tons a day," Nelson answered. "We figure it will take close to 3000 tons before this season is over."

"How much can you store in your sheds?" he was then asked.

"About 4500 tons. But we prefer that the elk feed on the natural grazing food in the fields as long as possible. It's much healthier. The calves, especially, get a disease called 'sore mouth' from eating the dry baled hay. This winter, however, has been unusually free of any sickness."

"What conditions determine the winter feeding of baled hay?" queried one of the men, a newcomer to Jackson Hole.

"Snow," Nelson replied briefly. "When the snow reaches an icy condition, the elk can't paw through to the grass on the ground. Some winters, it's before Christmas. Other years we don't start feeding until late January. All depends on snow conditions."

The pale afternoon sun had dropped

behind a mountain ridge when the men, tired but excited, finished counting the last numbers of elk on the upper feeding grounds.

"Can't believe it," said the old ranger, as they left for home. "Over 9,000."

"That's a lot of elk," laughed one.

The air census made by the Forest Service plane was a success also. When the complete numbers of the combined census were released, it was learned that the herd had increased to 16,000 head, a jump of 1000 since the last count of the entire valley in 1945.

In spite of hunting pressure, or the severe winter, the Jackson Hole herd was still holding its own against the encroachments of man and a narrowing range.

What does the future hold for this controversial elk herd of Wyoming? Will it increase again to top-heavy numbers by the time of the next complete count in 1952? Should hunting be increased, as some argue?—or the hunting season shortened, as others believe?

Or is the famous elk herd, the last remnant of those immense herds of yesteryears when America was young and prolific, to become merely a side-show for interested tourists? These and many other questions, some serious, others trivial, continue to rage about the animals as they forage for hay on their winter feeding grounds.

Oblivious to their fate, or indifferent to their numbers, the handsome antlered bulls, the sleek cows and timid calves follow only their ancestral instincts of preservation.

County Boards of Sweden protect the democratic administration of forestry laws by maintaining a high degree of authority in the hands of local citizens



The CFC—Carl and Sara Klingberg

County Forestry Chairman

By HARDY L. SHIRLEY

I MET Carl and Sara Klingberg on the evening train from Helsinki to Tampere. With twenty-seven other members of the Third World Forestry Congress we were starting on an excursion to the forests and wood-using industries of southern Finland. Carl is a large, sandy-haired Swede of forty-four with a kindly, yet strong face. Sara, his wife, overflows with energy and sociability.

was to become better acquainted with the way in which the Scandinavians regulate timber harvesting on private lands, and I found Carl an ideal subject to interview.

Both Finns and Swedes maintain good timber yields from their forests while encouraging private ownership and management. I found the Finnish system of controlling private timber cutting about the most democratic

not readily be adopted in the United States as we have nothing approaching their forestry organizations in intensity of coverage.

It was on the third day of the excursion, as we emerged from the *sauna* at Lahti with our bodies glowing from the combined effects of steam, cold water and birch whipping, that Carl invited Mrs. Shirley and me to visit them in Sweden. We readily accepted and, three weeks later, arrived at Gaevle, seventy miles north of Stockholm. Carl met us at the railroad station in his 1939 Ford and we set out for Mackmyra, nine miles away. As he drove, our host told us some of the history of his farm.

"My grandfather," he began, "was interested in mechanical things, industry, as well as agriculture. At Mackmyra he operated an iron foundry and a paper mill. And at the farm he installed a 250-kilowatt, water-driven electric plant. This was in 1905—and it has operated continuously ever since."

Carl had taken over the farm in 1938.

The highway led past attractive suburban homes, then prosperous-looking, well-tended farms. Suddenly our host turned off into a narrow lane that led through a private park. "This park, the manor house and pavilion, and the workers' homes also date from my grandfather's time," he explained. I felt I had been right in suspecting that Mackmyra Bruk would prove to be no ordinary farm.



Mackmyra, the Klingberg manor house, dates back three generations — is surrounded by fields and haylands and a 3000-acre forest

"I am a farmer, not a technical forester," Carl was quick to inform me. "I hope the congress will help me to discharge better my duties as chairman of the Gaevle County Forestry Board."

One of the objectives of my trip

that can be imagined. It operates through a vast network of forestry associations that represent landowners, timber operators, technical foresters and forest industries. These extend down into counties and townships. But the Finnish system could

Sara Klingberg and three of her children came out to greet us, and after an appetizing and bountiful luncheon Sara showed Mrs. Shirley the immaculate drawing room containing heirlooms and family portraits. The rest of the huge house displayed that homey, lived-in atmosphere inevitably created by a large and vivacious family where mother must do most of the housework.

That afternoon Carl showed us his dairy herd of sixty cows and his 250 acres of fields and hayland. Then, with the foreman, a graduate of one of Sweden's ranger schools, we had a long walk in his 3000-acre forest.

"This forest provided wood for the Mackmyra iron foundries for almost two centuries," Carl explained. "As early as 1822, it was rated by government officers to produce thirty-one cubic feet of charcoal wood an acre each year. Grandfather cut very little. In father's time most of the timber matured and was harvested. Today young trees occupy most of the land."

With the foreman's help, he gave me these figures: trees aged one to twenty years, thirty-nine percent of the acreage; aged twenty-one to forty, seventeen percent; aged forty-one to sixty, fifteen percent; and trees eighty-one and older, twelve percent.

To my eye, the Klingberg forest was good but not exceptional. Much of the soil was only fair, some of the forest was grazed, and timber quality was about average for the region. I learned that one forty-one-year-old stand of about five acres was growing 148 cubic feet an acre annually. This was the best. Average growth for the entire forest was fifty-nine cubic feet.

"Most of our farm income goes for labor, feed, fertilizer, seed and machinery," Carl said. "We look mainly to the forest for money to run our household and educate our children. I should keep more large trees—but an annual harvest of large trees is necessary to obtain the bulk of our cash income."

The forest foreman led us through spruce thickets needing thinning, pointed out some elite scotch pine trees, and explained that the large timber is marketed by a cooperative. The small material is sold to the local pulp mill.

At dinner I became acquainted with county forest officers and the technical director of the pulp mill. "These men carry the real work of the forestry board," Carl said modestly. "I just review and sign their recommendations when I think they are right."

Serious talk was given up then.

Sweden's celebrated smorgasbord was served on the open porch, then dinner—really a banquet—inside. We had coffee by candlelight in the pavilion where we later danced to the music of an accordion.

But next morning, as we drove to the forest school at Kratte-Masugn, Carl described the county forestry board and its responsibilities. Of its three members, one is the chairman appointed by the Minister of Agriculture, another is elected by the farmers' organizations in the county, and the third is elected by the county board of supervisors.

"I want to do an especially good job as chairman," Carl remarked. "I'm a member of the Conservative Party—but my appointment came from a Social Democrat."

The board has wide authority and wide responsibility. It hires the county forester, who serves as technical advisor and is responsible for the board's field operations. Eric Persson, the Gävle county forester, is one of Sweden's outstanding foresters. He

has helped the Gävle board assume a position of leadership among all the county forestry boards.

With the advice of its county forester, each board determines the forest practice standards that are to be followed by all private timberland owners in the county. These standards require that forest land be kept continuously productive and prohibit clear cutting of immature timber. After these regulations are published, it is up to individual owners to comply with them.

If an owner's practice is not up to standard, the district ranger reports him to the county forester. Special forest examiners are sent to investigate. If the ranger's report is substantiated, the offending forest owner is warned to comply with the published rules. If he does not, his case is referred to the county forestry board. He is called before the board, again told of his infraction, and required to sign an agreement to comply. He is then put on probation.

(Turn to page 42)



Spruce restocking area. Swedish law requires that land be managed for continuous production



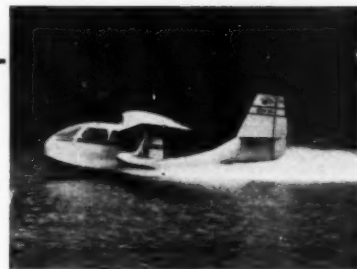
Photo by Maine Development Commission

The beauty of Maine's glacier-carved Kezar Lake is most striking at sunrise or sunset

A Westerner Looks at Maine

By EDWARD RITTER

The West has its rugged grandeur—but only the Pine Tree State can offer a Katahdin and lakes that range from giant Moosehead to such fascinating waters as Caucomgomoc and Chemguasabamticook



MY first real trip into Maine was an eye opener. To a newcomer it was a marvelous, a wonderful country.

The little amphibious plane took off from the Augusta airport and headed almost due north, passing over Skowhegan and Greenville, flying low between the Spencer Mountains and into the Allagash country. I found myself immediately facing comparisons.

Who am I to write about the Pine Tree State when prejudice might be lurking behind each word? Being born and brought up in the State of Washington and living a number of years in Idaho, there could be a possible conflict in appraisal of values. But there are differences and similarities between communities, and no community I have yet found either in Europe or America can lay claim to all of nature's grandeur, chambers of commerce to the contrary notwithstanding. Twin Falls, Idaho, potatoes are big and delicious, and so are those from Aroostock County, Maine.

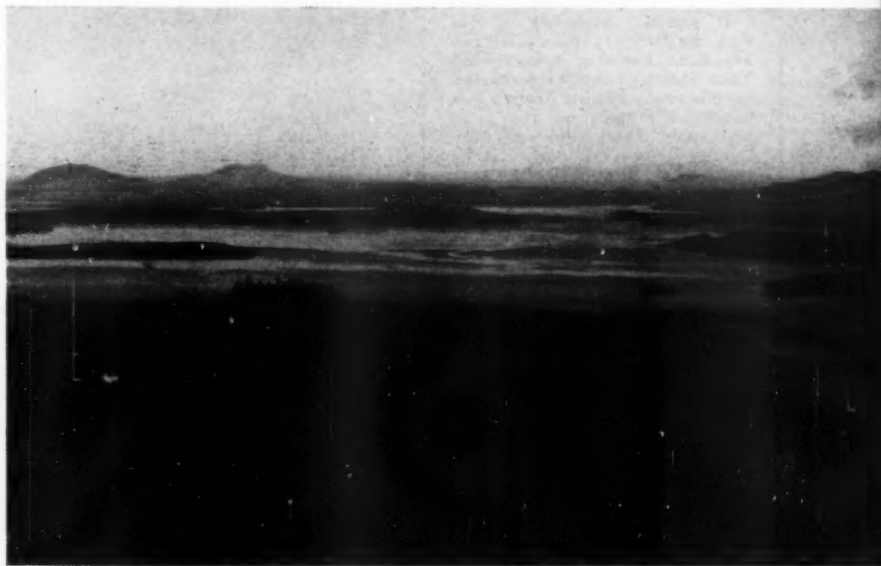
Rugged peaks such as the Cascades and Sawtooths were conspicuous by their absence. Nor was there anything to compare with Mt. Rainier, Lake Chelan, or Coulee Dam. But there was wild Mt. Katahdin and the Spencers and there were lakes and more lakes in the wild land townships "down East." Moosehead with one of the longest shorelines of fresh water, Chesuncook, Chamberlain, Churchill, Clayton, Clear, Cliff, Coxabaxis and Cross Lake are a few with symphonic alliteration, not to mention Caucomgomoc, Chemguasabamticook and others too difficult to remember.

Fishing and hunting, I was told, provide a sportsman's paradise and I heard some claims about "supremacy" in camping and other forms of recreation. Some of the information I picked up was authenticated on my visit.

Maine has an extremely long and rugged coastline. Its 19,685,000 acres of land area are eighty-five percent forested. The big woods of the north, about ten million acres, are probably as lightly populated and more isolated than any other single forest area in the United States. Almost ten percent of the total area is water—lakes and streams. In the big

woods the most common modes of transportation are by canoe and plane. Air travel is by far the quicker and generally most comfortable means of getting places, but a canoe trip up the Allagash is an experience highly recommended by Maine's sportsmen. On a cross-country hike in the summer, the black flies would literally eat you alive. Roads are about as sparse as in the wild Salmon River area of Idaho.

Lumbering is still a principal topic for discussion "down East." Maine, in 1830, was the big lumber producing state of the nation—and in 1879



Moosehead Lake is said to have the longest shoreline of any fresh-water lake in the United States (Great Lakes excluded). Mt. Katahdin is at right in background

it produced nearly four times as much lumber as Washington. Its peak production of sawtimber was over one billion board feet in 1909. Since then production has dropped to as low as 225 million feet in 1930—and for the past several years has remained constantly close to 400 million feet. Maine became a leading pulpwood producer in the 1870's and cuts annually over a million cords of wood for its pulp mills. Every spring one can see river and lake banks piled high with short sticks awaiting the spring breakup of ice to permit cheap "white-water" transport down cascading streams to hungry mills.

Some of the isolated forest area has yet to be cropped for pulpwood and it will take years to reach much of this growth at the rate roads are being built. The pulp and paper industry has been and still is vital to the economy of our most northeastern state. Other industries which are dependent in whole or in part on the forest for such matters as scenic setting or raw materials include recreation, inland fisheries, and woodworking plants. Failure to emphasize the

present importance of forest products would be heresy to the local fathers and gross negligence by the observer.

Because of great losses suffered from forest fires in the early days of the tall timber lumberjack and continuing into recent years, timberland owners began to look around for a way of "containing" this red demon. In 1903 over 250 thousand acres were burned and a small amount of money was appropriated by the Maine Legislature for forest fire protection purposes. In 1909 the Maine Forestry District Law was passed which created an administrative district comprised of wild land townships in which the forest commissioner was made responsible for fire protection.

Provisions were made to allow the forest commissioner to subdivide the area into sections, appoint firewardens, lookout watchmen, patrolmen, construct lookout towers and telephone lines and to purchase tools and equipment necessary for the protection of its timberlands. At present the Maine forest commissioner employs four supervisors and twenty-six chief wardens who are assisted by many deputies and patrolmen. Seventy-seven towers have been constructed at strategic points from which fires may be reported. Airplanes have been operated since 1927 to carry men and supplies into remote areas and to patrol in search of fires. At present the fleet consists of one Republic amphibian "Sea Bee" and a Luscombe "Silvaire 85" two-place seaplane.

Fire protection in the "inhabited" organized towns, which includes an area of over six million acres, is also in charge of a supervisor. Fire protection with state authority was spread relatively thin prior to the 1947 disaster. At that time the supervisor had but four yearlong wardens and their deputies to do the leg work during fire season. Twenty-seven lookout towers were manned during dangerous periods. This work was carried on in cooperation with local municipal authorities. The 1949 state legislature provided the forest commissioner with more full-time wardens, additional deputies and better coverage by lookout towers, additional equipment, storehouses and radio. The state forestry department now has full responsibility and authority in forest fire prevention and control.

Maine experienced an extremely disastrous fire season during the fall of 1947, but other than this, the state has had a good fire record. Only one-tenth of one percent of its forest area had been burned during the pe-

riod 1941 to 1945, but in 1934, the state was plagued with a series of fires which burned stubbornly in the north woods. In 1945, the year of victory—V-E and V-J—forest fires burned only three-hundredths of one percent of the total area protected, a remarkable attainment in such a vast land as the Pine Tree State.

There are traditions connected with Maine's lumbering. They say that Paul Bunyan was born there, and there the industry in America had its beginnings. Long before the Revolutionary War, this section became noted for its white pine timber which proved excellent material for shipmasts and spars. At one time the government in England had the best white pine sticks "reserved and marked with the King's broad arrow." The first shipment of timber for the British navy was made to England in 1635. The first sawmill in Maine, and perhaps first in America, was set up near South Berwick in 1634. This was nearly thirty years before the first sawmill in England was established.

In addition to its vast timber resources and its famous potato crop, Maine is endowed with a wealth of scenery that is enjoyed annually by thousands of people. Its seashore is unique for its rugged character. The sight along its rockbound coast would thrill even a sea-faring man. Viewing Mt. Katahdin from the ground or by plane, gives one a feeling of vastness which some folks associate only with the West. The colonies at Bar Harbor and other ocean-side points enjoy thrilling, lovely vacation periods. The trek through the Maine woods, made only with compass in hand, provides all of the solitude human nature can crave. A canoe trip across the lakes and ponds of the isolated country needs little of imagination to picture the Indians lurking behind each group of trees along the shore.

As said before, Maine hunting is famous, as is its inland water fishing. It has a thriving saltwater fishing sport and its annual lobster haul and commercial fishing add to the glamor as well as to the commercial income of what is known by the landsman's name of the Pine Tree State. It is an interesting state in which to make comparisons with some of our western area, including our northwestern states.

I have heard many claims to fame in many parts of our land and abroad. After my trip to Maine, and despite my western partiality, I still think the setting "down East" is marvelous—a wonderful country.



BOOTS AND SADDLE!

If you are planning to ride with the early expeditions of The American Forestry Association's Trail Riders of the Wilderness—time is running out. Only a few vacancies remain on the June and early July trips—and unless you reserve a place NOW, you may be disappointed.

Expedition No. 1—June 13 to 24—Great Smoky Mountains National Park, North Carolina and Tennessee, can accommodate but four more riders.

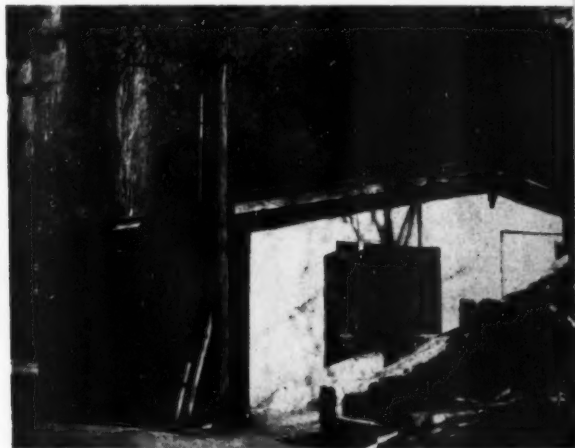
Expedition No. 2—July 5 to 16—Flathead-Sun River Wilderness, Flathead, Lolo and Lewis and Clark National Forests, Montana, can accommodate but five additional riders.

Expedition No. 3—July 8 to 17—Quetico-Superior Wilderness of Minnesota and Ontario, has canoe space for only six more.

For reservations on these and other expeditions—you have eleven to choose from—write The American Forestry Association, 919 17th St. N.W., Washington, D. C.



At the Stavros Station wandering goatherds have vanished -- forest people have permanent jobs



Telephone exchange. For the first time, forest communities have contact with rest of the island

Cyprus Forest Station

The forests of Cyprus, the Mediterranean island famed in medieval times as a green paradise, were so thoroughly plundered that not until the early part of this century were restoration efforts successful. Well managed state forests now assure the people of this British colony a vastly improved standard of living.



Malaria control is removing island's main cause of ill health

At all forest stations boys and men are taught to work with wood

Developing an appreciation of the economic value of forests is an important function at Stavros



New buildings are replacing herdsmen's villages of decaying hovels. This is the forest ranger's home

RED WING

Cures Its Headache

By HAROLD SEVERSON

How a small Minnesota town overcame a "Let-George-do-it" complex and tackled its own flood control and soil conservation program



THIS is the story of a small Minnesota town that rolled up its sleeves, grabbed a spade and hoe, and tackled a soil erosion problem that state and federal agencies had been by-passing for years. The result is as pretty a picture as you'd ever want to see of how small farmers and townspeople can work together with benefits to both.

The town is Red Wing, nestled down beside the Mississippi River in the southeastern corner of Minnesota. Its problem was a tough one, caused by the rushing waters of Hay Creek hurtling toward the Mississippi. Hay Creek averages two sweeping, raging floods each year. That means tons of sand and silt are deposited down at the mouth of the creek where one of Red Wing's leading industries, a large tannery, is located. Because of that fresh accumulation of flood-borne debris, the tannery has been forced to dig an expensive 900-foot drainage channel after each flood. In addition, the railroad that runs through the valley twice had to raise its roadbed and a highway is being relocated to keep it from being washed out or buried in sand.

But erosion doesn't end there. It goes back right up into the hills where the creek begins. There farmers were losing water, and with it their soil. Raw side gullies, deep enough to cover a house, were marching straight up their fields, reaching back into the hills, carrying off top soil that seldom is more than two feet deep, usually only a few inches. And when the sluicing flood waters raced down the gullies, they wrecked the county and township roads.

Nobody was happy about the situation, least of all tannery and railroad officials along with the farmers. But Red Wing for a long time acted on a "let-George-do-it" psychology. Local sportsmen's groups contacted their congressmen and fish and wildlife organizations in an attempt to have the Hay Creek watershed set aside as a game preserve. That plan never was put over. At one time the town induced U. S. Army Engineers to make an extensive survey of the lower part of the watershed with the thought of getting dams installed. Nothing came of this. During the depression, a demonstration project was planned for the area to show the right and wrong way of controlling soil erosion. But, like the others, this proposal died a'bornin'.

◀ On Arbor Day nearly 200 high school students turned out to help plant the trees

AMERICAN FORESTS

Things couldn't go on like this, so in 1945 townspeople got together with county officials and determined to lick the problem. Obviously they needed the cooperation of the farmers, but it was also apparent a centralized plan was needed. Nothing would be accomplished on an every-man-for-himself basis. And therein lies the significant part of this story—sometimes an entire town can work together as a single unit with farmers and thus achieve action.

The leaders—men like Lee K. Moore of the Soil Conservation Service, County Agent G. J. Kunau, and county commissioners A. F. Keye, George O. Thorson, Henry Sathrum, G. W. Diepenbrock and W. F. Dibble—had a fair idea of the necessary steps. In fact, the Board of Commissioners had requested the Soil Conservation Service to make a complete survey to find out how to control the rampaging waters of Hay Creek. That report was submitted in August, 1947. It was a sobering statement. For one thing, the cost of building a channel and constructing necessary control structures was conservatively set at \$500,000. Other experts figured it at a million.

The experts' report also recommended putting the lower half of the watershed into trees and pastures. "Let's make a community forest out of that section," it was urged.

It was a good idea, but it presented a problem of human rights. Nobody could move the farmers away from their homes and land. Oddly enough, although the farms were poor and small in size, none were tax delinquent. The farmers had part-time jobs in Red Wing and kept paying their taxes.

"Everybody knew we should plant trees—but who was going to plant them?" Lee Moore recalled. "The farmers didn't have time. They had their factory jobs, and when they were home they had to work in their strawberry patches and vegetable gardens and do other chores. They were willing to cooperate but, after all, there was a limit to what they could contribute."

Red Wing knew that if it waited for the federal government to act, it would be twenty-five years before the trees would be planted. Yet it wanted the municipal forest. Townspeople could envision it as a park, a picnic ground, and a wildlife refuge. Everybody was enthusiastic — and ready for somebody else to start the project.

That's been changed now. A spark
(Turn to page 44)



For years, Hay Creek farmers watched deep gullies march through their fields — silt and gravel (below) wash down from the hills



Collier Glacier



1936 — Lobes of glacier extend into the lake



1938 — Valley deepens as snow and ice recede

EVERY year, during the late summer or early fall, I take a sixteen-mile hike to see what has happened to "my glacier," otherwise known as Collier Glacier, in the Cascade Mountains of Oregon, and to make a photographic record of it. Each year so far, a shrunken remnant of the glacier of the preceding year has greeted me. Other changes, coincidental with its dwindling condition, have helped to make each trip a fascinating experience.

A serious attempt to keep a photographic record of Collier Glacier was begun in the fall of 1936 as a result of a chance conversation in Yosemite National Park with Dr. Francois E. Matthes of the United States Geological Survey. When I showed him my 1934 photograph of Collier, he told me that the glaciers of the West were diminishing. Furthermore, that they

were not remnants of the Pleistocene glaciers as had formerly been believed, but new glaciers. He suggested that, since I had an opportunity to do so, I should make a picture record of Collier as an example of a western glacier.

Collier is one of fourteen glaciers that occupy cirques (a steep-walled recess in the side of a mountain, produced by glacial "plucking" and grinding) on the sides of the Three Sisters, in the Willamette National Forest. The largest glacier of this group, it can also claim the distinction of being the largest in Oregon, and for its southern location, approximately forty-four degrees north latitude, the largest glacier in the United States. The Oregon Three Sisters Quadrangle, United States Geological Survey, 1932, shows Collier to be approximately one and a half miles long by three fourths of a mile wide. The

altitude at its snout is 7400 feet—at its summit, 9000 feet.

The large size of the glacier is the result of its location between two 10,000-foot peaks, the North and Middle Sisters. The slopes of both mountains serve as gathering grounds for ice and snow, thus giving it a double advantage over glaciers that occupy a single mountain. Collier flows north-northwest and is partially protected from the sun by the depth and direction of the depression in which it lies.

An excellent view of this glacier may be had from the summit of the McKenzie Highway, or from Scott Lake. From these locations, Collier appears to be simply the largest patch of snow on these mountains.

Three trails lead from the McKenzie Highway to the foot of the glacier—the Oregon Skyline Trail, Scott Trail and Obsidian Trail. All are

... YEAR BY YEAR



1941 — Lowering lake exposes delta formation



1948 — Slumping moraines form V-shaped valley

good for hiking or horseback trips, around eighteen miles round-trip. They are usually open from late July or early August until early October.

Evidence that Collier is not a remnant of the Pleistocene glaciers, but rather about 400 years old, the age that has been established for the glaciers of British Columbia and California, is as follows:

From photographs, Collier is seen to form an arc around a spur of the North Sister, about midway of its length. Inasmuch as truncation of spurs is the rule with glaciers, the fact that Collier has not yet accomplished this feat indicates that it has not yet had time.

The large size of the moraines, long considered evidence of the antiquity of the mountain glaciers of the West, has recently been proven to be caused by ice cores. Such a core was discovered during the summer of

1939 in the terminal moraine of Conness Glacier in the High Sierra of California, when a lake burst out, cutting a narrow channel through the embankment. The exceptionally steep slopes of the terminal moraine of Collier result from the matrix of ice in which the rocks of the moraine are embedded. The normal angle of repose for such volcanic material in moraines is much less steep. In the fall of 1948, much slumping of the steep moraines at Collier appeared to be caused by the melting of ice within the moraines.

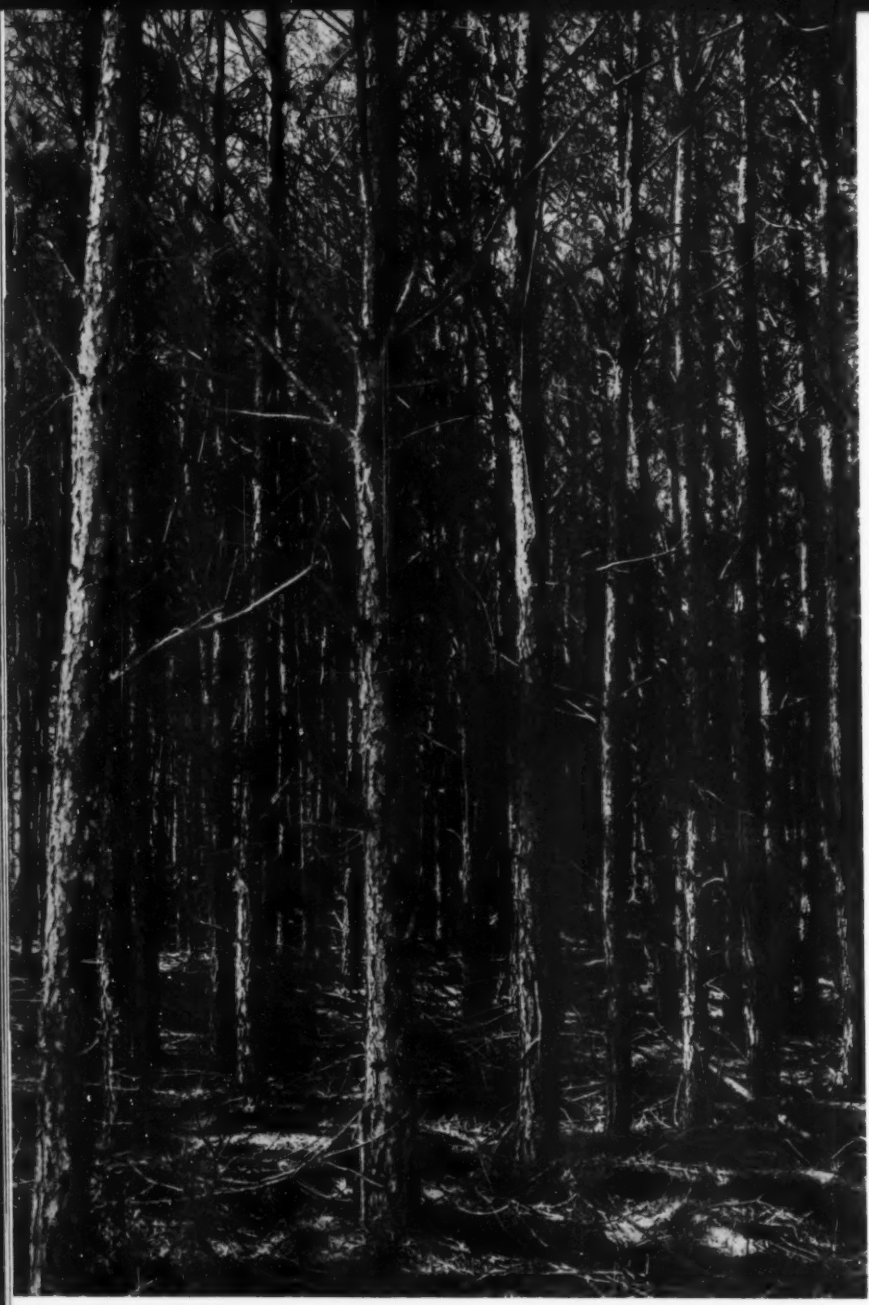
The interrelationship between Col-

lier and the most recent vulcanism in this area also indicates that the glacier has not extended further than the outermost terminal moraine since the last volcanic activity. Collier cinder cone now stands at the foot of the glacier, blocking its path. Yet it shows no signs of glacial or any other type of erosion.

The thin veneer of valley train (the filling of gravel, sand, etc. deposited in a valley by drainage from a glacier) that has been deposited by White Branch, the stream that drains the glacier, is another indication that

(Turn to page 41)

Is Oregon's largest glacier breaking up? Here is evidence that it is—that it may disappear entirely unless revived by return of a wet cycle



◀ Ready for thinning — a seventeen-year-old plantation of loblolly pine

THE Crossett Arkansas Companies, long identified with those progressive forest industries making use of education to encourage selective management of every acre best suited for growing trees, are now embarked upon an even more ambitious program. They are giving away pine seedlings to other landowners — then doing the planting as well.

The new Crossett venture was launched during the winter planting season with a donation of 500 thousand seedlings which the company planted on other lands. Another 200 thousand were given to individuals and schools willing to do their own planting. And this was in addition to Crossett's schedule of planting 1,800,000 trees on its own lands.

The decision to furnish and actually plant the half million seedlings without cost to landowners represents the first time such a step has been taken on so large a scale by an industrial concern. It stems from a desire on the company's part to replace every tree that arrives at its paper mill from lands where trees are not now being managed as a crop, with one or more seedlings.

Crossett—manufacturers of lumber and wood chemicals as well as paper in southeastern Arkansas—obtains the raw material for its modern paper plant from several sources. From company-owned lands come relatively young pine trees that have been cut in thinning operations. Also, the tops of sawlog trees provide a considerable amount of pulpwood.

But the wood derived from these sources is not sufficient to keep the paper mill running at capacity, so it is necessary to buy wood from farm woodlots and other small forests. It

A TREE FOR A TREE

By ROBERT MILLER

By planting, without cost, one or more seedlings for every tree delivered to their paper mill, the Crossett Arkansas Companies go all-out in a crusade against clear cutting on private lands

is here that timber growing acres are not being managed in a manner consistent with the premise that forest resources must be utilized to supply future generations as well as meet current needs.

Some of the private landowners and timber producers in Arkansas are clear cutting their timberlands which means there are no regenerating seed trees left to provide a new crop in from ten to twenty years. There are several reasons for this: the landowner may wish to sell all his timber; competition may force the independent wood contractor (he buys timber and resells to the various pulp mills) to clear cut to realize a profit; then some landowners and timber operators think only of immediate profit, with little regard to future income.

Crossett keeps a complete record of all wood received at its mill, including sources and types of cutting methods. This reveals that forty-two percent of the total comes from selective cutting on company, government and private lands; twenty-two percent is from salvage operations—tree tops, ice and fire damaged timber, etc.—and fourteen percent from seed tree or minimum diameter cutting with a good stand of pine remaining. Twenty-two percent is from clear cutting—and, of this, seven percent is from land-clearing operations, where farmers are converting woodland into pasture or crop land. Thus, undesirable clear cutting represents but fifteen percent of the total.

It is this fifteen percent, however, that concerns the Crossett companies. By offering free seedlings and the services of a tree-planting machine with its crew to the independent producers of wood and 4-H groups, the company feels it is helping to insure that future generations will be protected. Furthermore, it is estimated that if this effort were made on a like scale by nine other forest products concerns, within ten to fifteen years the pine trees planted would have matured sufficiently to provide the raw material necessary to support for an indefinite period a new kraft paper mill with a daily capacity of 300 tons.

This economic truth coupled with the even more salient facts regarding the southern paper industry, which is only one segment of the forest products utilization picture, serves to illustrate the importance of such a regeneration program. For example, approximately 185 million acres, or more than half the land area of the South, is covered with forests, which is ten times the acreage occupied by

the cotton crop. The southern paper industry employs 120 thousand people and pays them over \$200,000,000 annually in wages. But that is not all. These same paper mills are paying over \$100,000,000 annually to woodland owners, large and small, while \$60,000,000 is received by the railroads, truckers and barge operators for hauling the raw materials and finished paper and board products.

In a word, the plants in the South that turn out half of the nation's paper and paperboard represent an investment of over a billion dollars.

Apart from the wholly economic considerations of reforestation, it is interesting to contemplate how man can help nature in the desirable replenishment of this natural resource. In Nevada County, near Bluff City, the state operates a nursery in which millions of pine seedlings are grown annually. There the young trees are nurtured for one year before being removed from their beds and sold to private individuals and companies for transplanting.

Under normal conditions, the seedlings are put in the ground in rows which are six to eight feet apart with about six feet between seedlings, requiring from 1000 to 1200 seedlings for each acre planted. The mechanical planter has been devised in recent years as a means of materially cutting costs on a big area. This method permits a two-man crew to plant from 10,000 to 13,000 seedlings a day.

Once a pine plantation is started, the landowner must protect it from fire and grazing. While fire is a continuing threat to his investment, the danger from animal grazing diminishes after two or three years. But for the first and second year of its existence, the plantation should receive protection from heavy grazing.

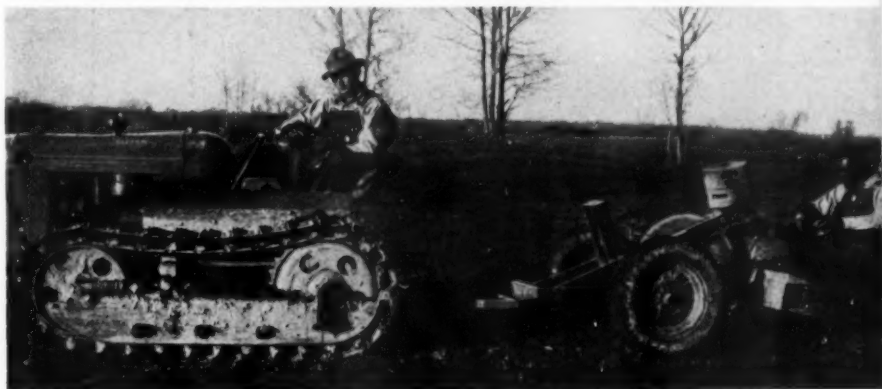
Given this protection, it is not uncommon to find plantations in which over ninety percent of the seedlings planted survive. Within ten to fifteen years, normally, the plantation has grown to such an extent that a salable thinning cut can be made. Wood buyers and foresters of the Crossett and other companies are always available to give advice on selective marking and cutting. The state forest service, along with the University of Arkansas Extension Service, also provides advice and marking service to private landowners. In addition, the U. S. Forest Service conducts demonstrations and experiments in proper forest management, passing along its findings without charge.

By using the services available to him, the small farmer or landowner who has idle land can, with a minimum of expense, become a tree farmer. By putting pine seedlings on otherwise non-productive land, he can increase the selling price of his land from ten to twenty dollars an acre at the outset, with increased value accruing as his plantation matures.

The Crossett companies, by virtue of their program to replace one seedling for every tree severed from lands not being selectively maintained, planted 500 thousand seedlings this year in ten Arkansas counties and four parishes in Louisiana. The seedlings and services of the planting crew were donated, and no control will be exercised over these private lands or seedlings after planting. Where private woods producers selling their products to the company had no open land for planting in a certain area, the company donated the services to 4-H Club members.

Proper forest management is a paying proposition for southern landowners, large or small.

Crossett has made this tree planting machine available to landowners—free



Managing Your WOODLANDS

This page is dedicated to the management of woodlands, large and small—practical suggestions in procedure and technique and in the solution of problems on the ground.

HOW TO MAKE A SMALL FARM WOODLOT PAY BIG DIVIDENDS

By FRED B. TRENK

FOUR years have elapsed since Ben Abraham began logging a twenty-acre tract of old growth red oak, basswood, white ash and walnut in the Pecatonica Valley of southern Wisconsin. It's an up-to-date logging job he's doing, too, with a power chain saw and a crawler-type tractor for the heavy work. Yet he is only about two thirds through with his first cut. Because logging is a part-time job for Ben—as it should be for all farm woodland owners—and because he has a small plant for sawing lumber staves and fuelwood, he makes that twenty acres look and yield like a hundred.

What's more, vigorous ash seedlings and basswood sprouts are filling in the earliest cut areas. These, with a moderately heavy stand of poles from six to twelve inches in diameter, assure him a future cut.

Ben bought the north half of a forty-acre tract from the heirs of a family which had homesteaded in LaFayette County nearly a century ago. Apparently, the best of the original growth was cut in the 1860's. Cultivated fields border it on three sides. Two deep ravines divide it into clearly-defined cutting compartments, each requiring one major and a number of minor skid roads.

During the four years of intermittent logging this tract has produced 93,113 board feet of sawed lumber, 28,675 feet of staves and approximately thirty cords of fuelwood and blocking for Swiss cheese tubs.

The versatility of the ten-twenty tractor has been proved in the logging of these woods. It has a power take-off for operating a buzz saw. All skidding is done with a log dray or travois, thereby keeping the logs clean and avoiding depressions in the soft soil which could so easily turn into gullies. With the use of the power chain saw, low stumps are the unbroken rule, so the tractor gets around in the cutover with little trouble. Two hired helpers complete the logging crew.

Logs are never decked in the woods. At least one truck load, and frequently two, are skidded to a central roadway for each day's logging, and by nightfall these logs are at the Abraham mill about fifteen miles from the woods. Since he operates a stove mill in connection with the sawmill, all straight limbwood, particularly basswood, down to four

inches in diameter is used.

Ben has been a close observer of the habits of hardwood trees. Red oak, he knows, needs plenty of light for reproduction, so the oaks are taken out in sufficiently large groups to open up the stand. But he is more interested in the ability of the basswood to sprout, for he knows that here is a tree that grows more rapidly than oak and has a higher value in his particular market area—the cheese tub industry. As in all long-neglected stands in which basswood may be found, there are small but defective trees that are permanently deformed. More sunlight could never improve their quality—no matter how much the rate of growth is increased. These are cut flush with the ground as part of his logging operations; whatever can be salvaged is used for fuelwood or stave bolts. The new sprouts in the open, he reasons, have much better prospects for growing into tall straight trees.

The same treatment is given broken and deformed red and white oaks. A mixed forest of seedlings and sprouts is being developed.

He is wrestling now with a problem of concern to many foresters, but all too frequently overlooked by farmers in woods management. Logging has broken the wall of foliage which his forest developed over the years on the three borders facing open fields. Sunshine and drying winds are now hastening the destruction of the layer of duff and, still worse, weed seeds blown from the fields germinate and produce a dense herbaceous growth that is harmful to the forest seedlings. He has resorted to planting pine and spruce on the west border of his woods where the real damage has been done, with the intent of obtaining a dense screen to fill the open gaps. At the same time he has become aware of the importance of keeping more of the old growth timber to serve the same purpose. Here is a critical factor in woods management in a farming area that only the forest-minded manager recognizes in time.



These bolts being cut from Ben Abraham's "Timbered Twenty" are destined for the cheese tub market, which is particularly active in Wisconsin's dairyland



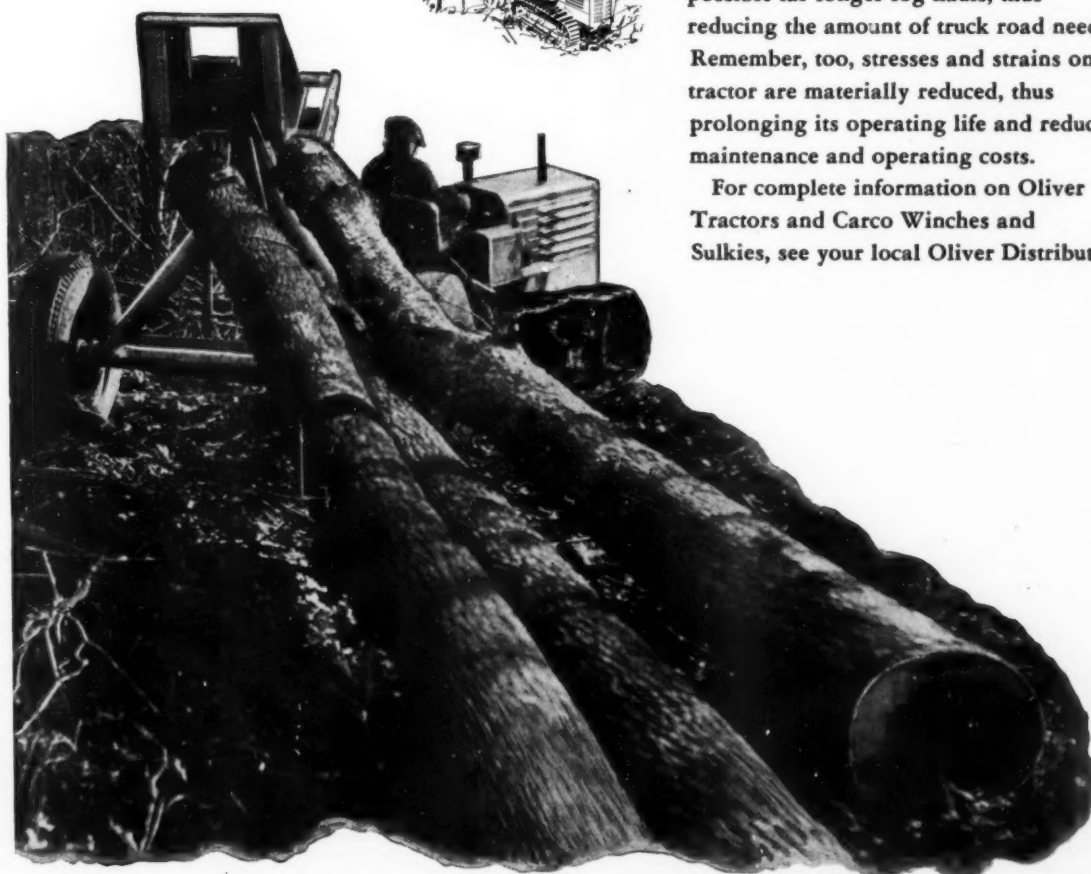
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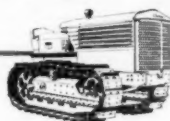
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"THE SIGN OF
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By WARREN D. BRUSH

LIKE the other western "cedars," Alaska yellow-cedar has a very limited range, occurring in the Pacific Coast region from southeastern Alaska southward through British Columbia and Washington, to southern Oregon. In Washington and Oregon it is usually confined to the western side of the Cascade Mountains and is not often found

below an elevation of 2,000 feet. It grows chiefly in moist, rocky or gravelly soils and is commonly found on bottomlands, along streams, in basins, valleys and gulches and on mountain slopes. The principal forests, suitable for commercial timber, are situated in northern Washington, on the west slope of the Cascades and in the Olympic Mountains.

Alaska yellow-cedar is a medium-sized tree, usually not over 80 feet in height with a trunk two or three feet in diameter. It takes about 250 years to produce a tree two feet in diameter and the largest trees are between 500 and 600 years old. On high, exposed slopes it assumes a sprawling form or it may become even prostrate on wholly unprotected sites. In the forest it usually develops a broadly buttressed, often fluted, base and rapidly tapering bole, which is often clear for about one-half its length. The conical crown is composed of numerous drooping branches with long, pendulous, flattened sprays of foliage. While the sprays droop in most of the "cedars," in no other is this drooping as marked as in the Alaska yellow-cedar, whose twigs look actually limp and wilted as they hang from the branches. The branches themselves, few and distant from each other, have a tendency to droop and the whip-like leader is too weak at its tip to stand erect and bends over gracefully. This "weeping" appearance given by the drooping branches distinguishes the tree from Western redcedar, for which it might be mistaken on casual observation. The leaves and the wood of the two trees are also distinctly different.

Alaska yellow-cedar is often called yellow cypress and yellow cedar, from the color of the wood. Sitka cypress is another common name.

The scale-like, blue-green leaves, about one-eighth inch long, are closely appressed, overlapping like tiny shingles. While they closely resemble those of the Western redcedar, they can be distinguished from the latter with which it is often associated, by their distinctive, sharp, spreading points, which make the spray harsh to the touch.

The minute, inconspicuous flowers appear in April—the staminate, or pollen-bearing on lateral branchlets of the previous year and the pistillate, or female clustered near the ends of upper branchlets. The very small, spherical, reddish brown cones, about one-half inch long, stand erect on the branchlets, ripening in September or October when they open slowly to shed their seeds. Each cone is made up of from four to six scales, each with a blunt, horny point. Under each scale there are from two to four seeds; they measure about one-quarter inch in length and the thin, lateral wings are about twice as wide as the body of the seed.

The fibrous bark is thin—rarely over one-half inch in thickness, even on old trees, and affords poor protection against fire, which the tree rarely survives. It is ashy brown on the outside, and clear, reddish cinnamon-brown when broken. The surface is irregularly and rather finely broken by shallow seams; the thin, flat ridges have frequent diagonal cross connections, and flake off in long, narrow strips.

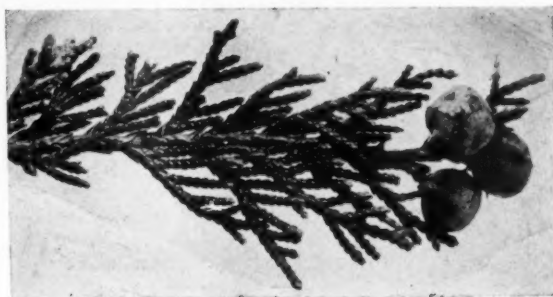


Oliver V. Matthews

Alaska Yellow-cedar is a medium-sized tree, usually not over 80 feet in height with a trunk two to three feet in diameter



The blue-green leaves are about one-eighth of an inch long. The minute, inconspicuous flowers generally appear in April



Kenneth Wallin

The reddish brown cones ripen in September or October. About a half-inch long, they stand erect on the branchlets

The fine and even-textured wood of Alaska yellow-cedar is moderately heavy, moderately strong, moderately hard, is easily worked, shrinks little in drying, and ranks with the most durable species such as baldcypress in resistance to decay. It weighs about thirty-one pounds a cubic foot when air dry. Its bright, clear yellow heartwood is hardly distinguishable from the thin, white to yellowish sapwood. A large part of the cut of Alaska yellow-cedar is used locally for interior finish, furniture, small boat hulls, cabinet work and novelties.

The comparatively limited supply is likely always to confine the usefulness of this wood to a few special but, nevertheless, important purposes, such as small boat construction, for which it is especially well suited, competing with Port Orford whitecedar for that purpose. Other specialty uses are patterns, pyrography, and canoe paddles. For the latter use it has long been the preferred wood of the Alaska Indians.

Alaska yellow-cedar generally produces a small amount of seed each year, but large crops are released at irregular and infrequent intervals. The percentage of survival is never very great. It is often cultivated as an ornamental, and when well-grown makes a handsome, narrow, pyramidal tree with attractive dark-green foliage. Its several horticultural varieties have been planted in the Middle Atlantic States, in California and commonly in the countries of western and central Europe. The variety *pendula* has spreading branches and long pendulous branchlets.

Repeated fires often destroy the young growth and also inflict serious damage on the older trees. Alaska yellow-cedar is quite often free from fungus attacks.

The tree grows very slowly in height and diameter. It is very long-lived, however. It requires 200 years to produce a tree large enough for sawtimber. Trees from 15 to 20 inches in diameter are from 200 to 275 years old.

Alaska yellow-cedar is very important as an associate with other trees capable of forming protective cover on cold, high slopes where it grows along with mountain hemlock, lodgepole pine, alpine, silver and noble fir, Douglasfir, Western larch, Western white pine and Engelmann spruce. At lower elevations it occurs with Sitka spruce, Western redcedar, Western hemlock and grand fir and sometimes grows in pure stands of limited extent. Where soil and air are abundantly moist it thrives in the open, but where soil moisture is deficient the tree prefers partial shade and shelter.

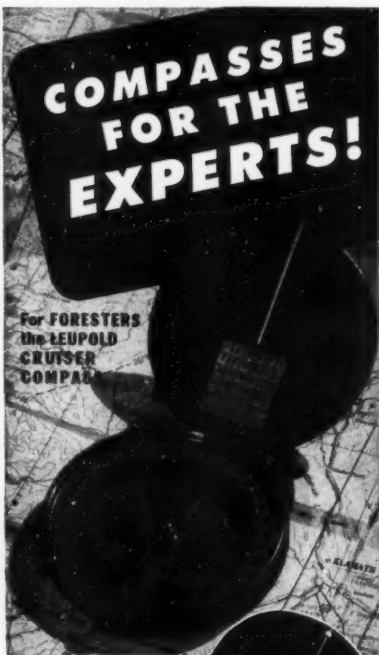


The ashy brown fibrous bark has an irregular surface broken by shallow seams. It is thin — rarely over a half inch thick



The Alaska Yellow-cedar occurs in the Pacific Coast region from southeastern Alaska southward to Washington and Oregon

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NEWS IN REVIEW

The American Association of Nurserymen has launched an ambitious "Plant America" movement with the avowed intention "To conserve the land, to make it greener and more productive for abundant life, beauty and recreation." Endorsed by representatives of the federal extension, soil conservation and forest services and by thirty private national conservation organizations, the program would turn waste areas into wildlife coverts, eroded lands into woodlots, barren roadsides into garden spots and factory yards into show places. It would conserve water and topsoil, prevent the siltation of reservoirs and, in general, make America a better place in which to live.

Elsewhere along the planting front, the U. S. Forest Service is busily completing the chore of planting five million seedlings on 8000 acres of national forest land in Oregon and Washington. Another 700 acres are being planted by direct seeding. Since national forest plantations were first begun in the Pacific Northwest forty years ago, a total of 98,500 acres have been planted. This program will be accelerated even more now that the new Forest Service nursery at Bend, Oregon, is in production. The newly enacted Anderson-Mansfield law, authorizing greater expenditures for planting, will also help.

The Lake States Forest Experiment Station has made a contribution in the interest of planting, too, by issuing a comprehensive report on how best to reforest the estimated twelve and a half million acres of burned and cut-over forest land in that region. The station made more than 4000 tests on seeds of some 270 different trees and shrubs during the past twenty years.

In Virginia, the Junior Chamber of Commerce has completed the most successful conservation program in its history. Through the help of several fund raising campaigns, the Virginia Jaycees purchased 263 thousand seedlings which were planted by Future Farmers of America groups. The national Jaycees used the Virginia tree planting program as a model.

Wisconsin, on April 26, observed the twenty-second anniversary of its

school forest program, with Dick Abbott, extension forester for the University of Wisconsin, reporting a total of 231 school-sponsored forestry tracts and nearly 17,000 acres now in the program. Thirty counties have school forests, the average being around forty acres each. Rusk County has thirty-six school forests, but Oneida County boasts 2260 acres in its eighteen forests.

The Washington State College Forestry Club chose the first week of May to sponsor a state-wide Forest Conservation Week for the purpose of promoting a better appreciation of the Northwest's natural resources. So well organized was the venture that it received active support from Governor Arthur B. Langlie, private, state and federal forestry officials, many high schools in the state, chambers of commerce and service clubs. Fire prevention displays, movie shorts and news stories featured the week.

Always conservation-conscious, the Boy Scouts of America now may compete individually for a special conservation award given through the courtesy of the New York Zoological Society. To apply for the award, a scout must show outstanding achievements in bringing about through his own initiative a change in policy or practice on the part of three or more farmers, property owners, or sportsmen toward the wiser use of natural resources; and by helping start a conservation program in one or more organizations in his community.

Cooperating with the Industrial College of the Armed Forces, the National Lumber Manufacturers Association has been presenting a series of lectures by outstanding lumbermen designed to acquaint high ranking student officers with facts concerning the lumber industry. Emphasis was placed on providing a working knowledge of the industry and presenting facts which will enable them to utilize lumber and wood products to the best advantage in time of war. Among the speakers was C. D. Dosker, president of Gamble Brothers, Louisville, Kentucky (see "Getting the Most Out of Wood," *American Forests* for December, 1949.)

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THE **MILWAUKEE** ROAD

Enthusiastic over the success of the first kiln drying course to be held at North Carolina State College in Raleigh, thirty men from southern furniture and lumber plants have formed a Dry Kiln Club to keep up with new developments. The first meeting was held in May at the George C. Brown Company plant, Greensboro. Charles T. Griffin of the Halsey Hardwood Company, Edenton, was named club president.

After two years of exhaustive research and experimentation with a new type of wood called "Milpak," the Timber Engineering Company of Washington, D. C., has begun courses of instruction for hardwood lumbermen and fabricators to help them produce and sell this lumber. The first

Agriculture investigations on the insect pests that affect forests and forest products, has retired to a farm in Cumberland County, Pennsylvania, the region where he spent his boyhood. Dr. Craighead is noted for his many contributions to the knowledge of grubs and beetles and for his success in controlling their ravages.

Rare tropical woods from the French Cameroons in Africa soon will be turning up in the world's living rooms, thanks to Marshall Plan and other American help. The Economic Cooperation Administration has announced that about \$1,600,000 worth of American machinery and other equipment has gone into a sawmill and logging camp now being established by a French firm at Eseka in

WORKING QUALITIES OF WOOD

For wood carvers, cabinet builders and hobbyists, here is a handy guide to some popular American woods showing their workability with hand tools:

SOFTWOODS—*Easy to Work*: incense cedar, white cedar, Port Orford cedar, western red cedar, white pine, ponderosa pine and sugar pine. *Medium to Work*: eastern cedar, cypress, balsam fir, white fir, lodgepole pine, redwood, eastern spruce, sitka spruce. *Hard to Work*: Douglasfir, larch and southern pine.

HARDWOODS—*Easy to Work*: red alder, basswood, butternut, chestnut and yellow poplar. *Medium to Work*: paper birch, cottonwood, black gum, red gum, tupelo gum, magnolia, sycamore and black walnut. *Hard to Work*: ash, beech, cherry, elm, hackberry, hickory, locust, maple and oak.

course was held from May 22 to May 26, and another will begin June 19 at the TECO Laboratory. "Milpak" is described as a new form of lumber made by remanufacturing No. 2 common boards to produce a number of cuttings ranging from clear two sides down to sound.

Names in the News: The Izaak Walton League has selected **J. Hammond Brown**, president and executive director of the Outdoor Writers' Association of America, to receive its Public Relations Honor Roll Award. The Ohio Forestry Association has announced an addition to its staff, **Major Norman Imrie**, who will be special field representative and special lecturer on forestry and kindred subjects. Major Imrie has a varied background as an educator, newspaper editor and lecturer on the Chataqua circuits. **Dr. Frank C. Craighead**, for nearly twenty-seven years in charge of the U. S. Department of

the jungles of the Cameroons. Among the woods which will be introduced are ekki, atonu, iroko, apara and, of course, mahogany.

A British specialist, Norman A. Richardson, who is affiliated with Great Britain's Forest Products Laboratory, has been making a tour of nine states to observe new American wood preservation techniques in research centers and industrial plants. He has been making an eleven-week study under an ECA technical assistance project requested by the British to help avoid unnecessary waste of timber in the United Kingdom.

The 2000 miles of telephone lines which blanketed the fire protection area for the Texas Forest Service are being sold in favor of equipping the seventy-five towers with radio communication. Maintenance costs of the telephone lines were considered prohibitive.

A School of Natural Resources will be established this fall at the University of Michigan to replace and expand activities of the School of Forestry and Conservation. In announcing this pioneer step into the field of natural resources, Dean Samuel T. Dana said the establishment of the new school is a logical further step for the University at this time, permitting a widened program of teaching and research which will consider everything nature has placed on, under and over the earth in their relation to man.

"Professional training will continue to be given in forestry, wood technology, wildlife management and fishery management," Dean Dana said in describing the courses to be offered by the new school. "In addition, nonprofessional courses and programs dealing with these and other resources, such as soils, minerals and water, will be offered along with land-use planning and general conservation."

These programs will cover matters of basic, general interest relating to the distribution, characteristics, utilization and conservation of natural resources and their place in the national economy. Agricultural and mineral resources will be considered in these programs, but Dean Dana emphasized that no professional training in agriculture or mining engineering will be offered.

The Charles Lathrop Pack Forestry Foundation headed by Randolph G. Pack (who, with Dean Dana, serves as an AFA vice-president) is helping in the support of the new school through two grants. The foundation has made a grant of \$10,000 a year for ten years to provide for an additional faculty member and \$10,000 a year for three years to support research on the problems arising in the field of natural resources.

Already appointed to the Charles Lathrop Pack Professor of Conservation post is Dr. Stanley A. Cain, currently in charge of botanical research at the Cranbrook Institute of Science. He will join the University faculty at the beginning of the fall semester. In addition to the Pack professorship, Dean Dana has announced Dr. Cain will also have the rank of professor of botany in the College of Literature, Science and Arts.

The Wisconsin Conservation Commission has assigned \$48,275 for a complete forest inventory of north and central Wisconsin.

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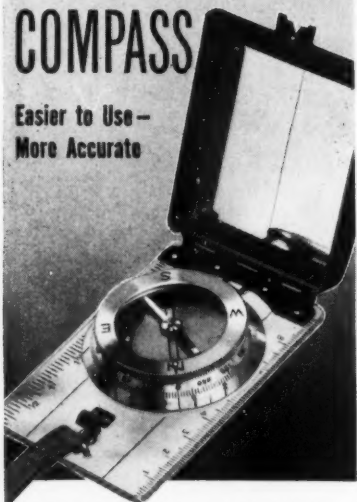
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New

PRODUCTS

Write the Editor for more complete information on the new products described below:

Indian Fire Pump—new model of famous back-pack pump offers a patented air-cooled design constructed to fit the carrier's back and prevent direct contact with the moist, water-filled tank. Air circulates freely between the tank and carrier's back, providing greater comfort. Manufactured in 5-gallon size by D. B. Smith & Company, Utica, New York.

Camper Knife—a unique and practical knife that combines a complete eating unit with a fishing and general utility pocket knife. It is made of stainless steel and is non-rusting throughout. The Camper is manufactured by the George Schrade Knife Company, Inc., 46 Seymour Street, Bridgeport 8, Conn. The device is extremely flat and thin and may be slipped into a pocket or hooked onto the wearer's belt by utilizing the ring on the end of the knife. Ideal for hunting, fishing, hikes and picnics, and is also handy to have in the glove compartment of your car.

Iron Frame Swing Saw—the Wheeland Company, Sawmill Division, Chattanooga 2, Tennessee, has developed a new and better iron frame swing saw which is light, strong, rigid and durable. All its moving parts are on ball bearings. For mills where slabs or other culls are cut to stovewood or other standard lengths, an automatic swinging device is available, allowing one man to feed the saw faster, safer and with less effort than most two-men teams.

Self-priming Portable Pump—a new ultra light-weight self priming pump is being manufactured by McCulloch Motors Corporation, 6101 West Century Boulevard, Los Angeles 45, California. Rated at 15,000 gallons per hour output, the manufacturer claims that its weight is approximately one-half that of pumps with the same capacity now on the market. The pump is powered by a five-horsepower gasoline engine similar to the type used on McCulloch chain saws.

Portable Radio Station—Carlone Station Unit "15," a new portable transmitter-receiver, smaller than an overnight case, for use as headquarters station equipment in mobile communications systems operating in the 152-174 megacycle range, has been announced by RCA Engineering Products Department, Camden, New Jersey. The new FM station equipment was designed by RCA to meet the needs of police and fire department systems in small or medium-sized municipalities, forestry conservation systems, logging camps and similar outdoor activities.

Tree Shaver and Saw—a combination implement which reduces labor costs of making pine gum. One man does the work of five by simply shaving bark from tree, turning tool over, sawing shallow cut, crimping gutter and inserting cut, making second cut, crimping gutter and inserting into cut. Then he is ready to hang cup, put on lead streak and apply acid. Available at Forestry Equipment Company. Offices at Jacksonville, Florida, Macon, Georgia, and Pritchard, Alabama.

Murco Portable Wood Chipper—a portable version of the Murco stationary chipper which has been used for many years in the production of pulpwood chips in the paper industry. It is compact, designed for low power consumption, efficient and easy to maintain. Weighs approximately 20,000 pounds, including skid mount and diesel engine. Has a capacity of 15 to 20 cords per hour. D. J. Murray Manufacturing Company, Wausau, Wisconsin.



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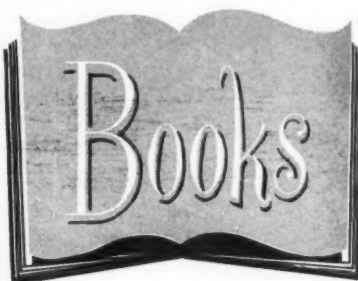
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OUR SOUTH, ITS RESOURCES AND THEIR USE, by Everett F. Evans and Roy L. Donahue. Published by the Steck Company, Austin, Texas. 406 pages, illustrated. Price \$3.50.

The nation's frontier now lies in the South, the authors believe, and in eight fruitful chapters give the reasons for their faith. The book covers thirteen states and deals with minerals, soil, water, forests, grass, wildlife, climate and the people. Problems are pointed out together with some ways in which the people can work together toward a solution through wise use of resources.

The book should find widespread use in schools in the teaching of conservation. It is wonderfully illustrated with photographs, maps and charts and supported with many vital statistics. It is likewise a storehouse of information for government workers, legislators, speakers, writers and civic leaders.

RAINY RIVER COUNTRY, by Grace Lee Nute. Published by Minnesota Historical Society, St. Paul, Minnesota. 143 pages, illustrated. Price \$2.

This charming book tells the story of the border country of Minnesota and Ontario—the region of the Rainy River and the two lakes that it joins, Rainy Lake and Lake-of-the-Woods. It tells, too, accurately, simply and with warmth, of the earliest people who passed through the region—the Mongoloid men of Asia; of the mound builders, the Sioux, the Chipewas, the traders, the missionaries and the settlers.

It reveals the growth of the region from farms, lumbering and the development of great industries. Interesting historical photographs add to the book's appeal.

THE ECONOMIC PROBLEMS OF FORESTRY IN THE APPALACHIAN REGION, by William A. Duerr. Published by Harvard University Press, Cambridge 38, Massachusetts. 308 pages. Price, \$5.

The author, chief of the Division of Forest Economics at the Southern Forest Experiment Station, New Orleans, Louisiana, seeks quite successfully to define the field of economics of forestry and outline the economic problems of forestry as background for research. The book deals with the Appalachian Region, but the principles outlined are applicable to any area. It aims at a better understanding of the forestry problems facing people.

THE CHEMICAL FORMULARY, Volume VIII, by H. Bennett. Published by Chemical Publishing Company, Brooklyn, New York. 428 pages. Price, \$7.

This is the latest addition to a series of collections of valuable, timely, practical commercial formulae and recipes for making thousands of products in many fields of industry. The contents are the result of long years of research and millions of dollars spent on experiments on the part of some of America's leading industrial and research chemists.

APPLIED SILVICULTURE IN THE UNITED STATES (Second Edition), by R. H. Westveld. Published by John Wiley & Sons, Inc., New York City. 569 pages, illus. Price, \$6.

This book deals with the ecological background and economic problems of the forest types in the nation and the application of various silvicultural measures to meet varying situations. In this second edition, changes have been made to emphasize the advances made in silviculture in the past ten years. The author is at present professor of forestry and chairman of the Department of Forestry at the University of Missouri.

BOOK OF THE STATES, 1950-51, by the Council of State Governments, Chicago 37, Illinois. 839 pages, illustrated. Price, \$7.50.

This book provides an authoritative source of information on state activities, administration, legislatures, services, problems and progress, together with completely current listings of state elective and administrative officials and members of the legislatures. It also reports on interstate cooperation, and other agencies concerned with intergovernmental problems.

Vital state statistics are included, together with expenditures, information on land ownership, park attendances, conservation set-ups and activities, educational institutions, etc.

STATE CONTROL OF PRIVATE FORESTRY UNDER EUROPEAN DEMOCRACIES, by M. L. Anderson. Published by Oxford University Press, New York City. 112 pages. Price \$3.50.

Here is an analytical study of forestry developments in eight countries — Belgium, Denmark, Finland, France, the Netherlands, Norway, Sweden and Switzerland — in the decade 1938-1948. The study was undertaken by Dr. Anderson of the Imperial Forestry Institute on a grant by the Company of Carpenters, London.

There appears to be a tendency, with the possible exception of Belgium and Denmark toward increased socialization of industries and wealth and toward increased interference by the state, the author finds, very largely due to the effects of war. He indicates that there may be reaction against too much control, and that in several countries private forestry is being strengthened by a number of means, namely increased cooperation between private owners.

In each country, Dr. Anderson covers such information as forest ownership, state and non-state organizations concerned with private forestry, and their relationship to each other. He finally makes a number of conclusions, with special reference to Great Britain.

WESTERN LAND AND WATER USE, by Mont H. Saunderson. Published by University of Oklahoma Press, Norman. 217 pages, illustrated. Price \$3.75.

The author, with twenty-five years' experience as an agricultural economist with Montana State College and the U. S. Forest Service, spares no interests either private or governmental, in discussing abuses to farm, grazing, timber and wild lands, of the states west of the 100th meridian. He proposes stringent measures for their correction, such as federal action, possibly through a combination of extended federal ownership, and increased subsidies to private agriculture and stock-raising.

PLANTS AND ENVIRONMENT, by R. F. Daubenmire. Published by John Wiley and Sons, Inc., New York City. 424 pages, illus. Price \$4.50.

This book is an outgrowth of the author's more than ten years' experience in teaching the fundamentals of plant ecology, of his wide research and thousands of miles of travel in the interests of botany.

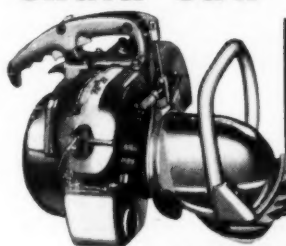
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For example, if a tree has thirty to forty needles in a cluster, it can be identified as a western larch; if it has twelve to twenty needles in a group it is tamarack, no other American trees having such needle groupings.

The author, Herbert Appleton, of Washington, D. C., is a statistician who became interested in trees. As a statistician, he wanted to know how trees differ from one another. His new tree guide entitled, *What's That Tree?* was made first for his own use and later tested in various sections of the country.

As a basis for the guide, he selected the 150 trees chosen by The American Forestry Association for its popular book, *Knowing Your Trees*. In addition, the key includes complete illustrated information on poisonous plants such as poison ivy, poison oak, and poison sumac. The guide is pocket-sized and can be used in the woods or in the park without the user having to refer to bulky text books. A winter and summer guide is included. The summer guide is built around leaf characteristics, the winter guide around easily-discerned twig and bark differences.

Priced to be available to beginners in tree study, to Boy Scouts, Girl Scouts, and similar youth groups, as well as to adults, the pocket guide sells for twenty-five cents a copy, with a reduction for quantity-lot purchases. It is available directly through The American Forestry Association, 919 17th St., N. W., Washington, D. C.

My Favorite Tree

(From page 4)

represent "the forests," and often provide the only natural shade for many miles for men and beasts.

I am tempted to mention other favorite trees, for it seems to me that trees, like music, have the power to evoke feelings and moods. And who can name his favorite mood? But I was invited to write a page not a book.

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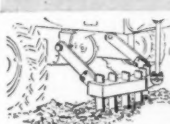
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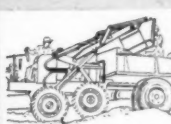
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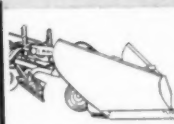
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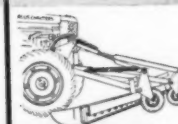
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Durite—describes Durite phenolic molding compounds, industrial resins and cements. Chemical Division, The Borden Company, Dept. PR, 350 Madison Avenue, New York 17, N. Y.

You, Too, Can Grow a Redwood Tree!—tells how to grow redwood trees in other climates than California, and helps choose which of 15 species is suited for your climate. 50 cents. Rare Plant Club, 208 McAllister Avenue, Kentfield, California.

Is Your Horsepower Going to the Track? and "How Long is Your Tractor's Life Line?"—two new folders describing performance-boosting and cost-cutting features of International crawler tractors. Consumer Relations Department, International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Illinois.

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A Dictionary of Electronic Terms—contains over 2500 terms used in television, radio and industrial electronics. 25 cents. Allied Radio Corporation, 833 West Jackson Boulevard, Chicago 7, Illinois.

The New Riteway Complete Combustion Wood-Burning Heater—describes features of a new heater which burns fuelwood of any size. Riteway Products Company, Harrisonburg, Virginia.

How Not to Prune and How to Prune Fruit and Shade Trees—describes and illustrates the three most important factors in pruning, tells how to avoid making mistakes. J. B.

Sebrell Corporation, 300 South Los Angeles Street, Los Angeles 13, California.

School Buildings Your Tax Dollars Can Afford—tells advantages of one-story wood frame buildings to provide safe and adequate housing for school children. Timber Engineering Company, 1319 18th Street N.W., Washington 6, D. C.

1950 Fishing Catalog—32-page catalog (No. 250) contains fishing calendar, many fishing tips and paintings of game fish, as well as leading quality fishing tackle manufactured by Wright & McGill Company, 1463 York Street, Denver, Colorado.

Breck's Spring and Summer Catalogue—lists home and garden specialties for better living. Breck's, 100 Breck Building, Boston 10, Mass.

Armco Perforated Pipe for Controlling Ground Water—24-page illustrated booklet describes how harmful ground water can be controlled to provide stable roadbeds and dry subgrades, for airports, streets, recreational areas and industrial sites. Armco Drainage and Metal Products, Inc., Middletown, Ohio.

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The Master of Flame—illustrates the complete Ansul Chemical Company line of dry chemical fire equipment. 20-page booklet. Ansul Chemical Company, Marinette, Wisconsin.

Seeds for the Nurseryman and Forester—price changes and additions for January, 1950. F. W. Schumacher, P.O. Box 131, Jamaica Plain 30, Massachusetts.

Collier Glacier

(From page 23)

Collier is relatively young. Outbreaks of the terminal lake in 1942 and since have caused sudden deepening of the stream's channel, resulting in the exposure of cinders and volcanic ash below the fluvial deposits.

Previous to my study, the history of Collier Glacier is to be found in a few published and unpublished records. Dr. J. S. Newberry was probably the first scientist to be interested in Collier. The glaciers amid the Three Sisters attracted his attention while he was connected with the Pacific Railroad Survey in 1855, but no report of his observations was published. In 1883, I. C. Russell stated that J. S. Diller of the United States

'TIS TRUE

Norway pine (*Pinus resinosa*), gets its name not because it grows in Norway but because it was first logged in Norway, Maine.

Geological Survey considered the group of peaks known as the Three Sisters as affording the most interesting field for glacial studies in the United States, with the exception of Alaska.

An unpublished account of a trip to Collier Glacier in 1882, written by Carey F. Martin, a boy teamster, describes the glacier as filling the valley. The ice precipice at the lower end of the glacier was estimated then at eighty-two feet.

My first visit to Collier was in August, 1933. At that time there was no lake at the lower end of the glacier. I first saw this lake in October, 1934. In fact, it was the sight of it that caused me to take the first photograph.

What will eventually happen to Collier Glacier? Will it disappear? No one knows. Its fate depends upon annual precipitation. Drying lakes in eastern Oregon and dwindling glaciers in the Cascades attest a dry cycle in the West. Should a wet cycle return, the increased precipitation in the form of snow in the mountains might revive the glaciers. Precipitation and not temperature is the critical factor. Long-time climate cycles are known to be about ninety-nine years. Perhaps a wet cycle will return. Meantime, I hope to continue my photographic record of Collier Glacier.

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gating hybrid trees and seedlings from elite parent trees is a major activity. We feel that it is very important to improve the quality of trees we grow in our forests."

At Kratte-Masugn we saw a propagating nursery with clones of elite trees used as grafting stock. Plantations were made of seedlings of elite parents alternated with grafted stock. The program of work is ambitious. It is financed cooperatively by the county forestry board, the Society for Improving Seed Stock, and local forest industries. The county board cooperates with the forest experiment station in Stockholm, but carries on this work entirely on its own.

"I want especially to show you our forest school," Carl said with pride. "This we organized entirely on our own initiative and it differs from all others in Sweden. You see, Sweden has good schools for rangers and professional foresters, but this is the only school in which we inform laymen about forestry."

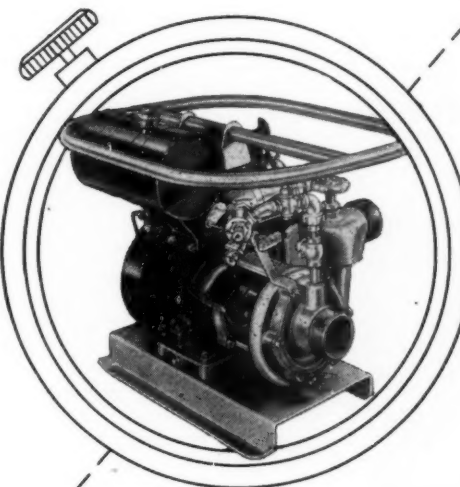
The school director explained their program, mainly a series of short courses. One, for farmers' sons, teaches them how to handle the farm forests; another, for journalists, is designed to increase the accuracy of reporting on forests and forestry. Bankers are given a short course in evaluating forest land and timber growth rate as a basis for granting loans to forest landholders. Other groups are served in like fashion. The school, which accommodates thirty persons, was finished just a year ago. Its program will be followed with great interest throughout Sweden and other countries.

My visit with Carl Klingberg made it clear that Sweden's county forestry boards have important duties, enjoy high prestige, and receive wide latitude from the national Bureau of Forestry in Stockholm. Until recently, the county boards financed their operations largely through a special forest land tax. Now the money so collected goes to the Bureau of Forestry which redistributes it to the counties after reviewing the individual budgets submitted by the county forestry boards. I learned that savings from past years have enabled the Gaevle board to undertake a number of new and original forestry operations.

A high degree of mutual respect exists between the Bureau of Forestry and the county boards, though one senses some differences of opinion over the degree of authority that

(Turn to page 47)

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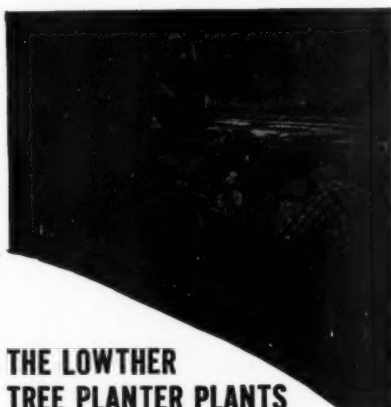
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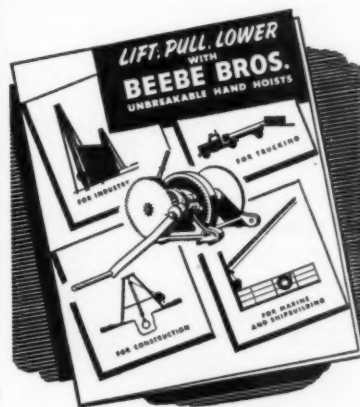
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Red Wing

(From page 21)

was ignited, and aroused civic groups like the Kiwanis Club, the Izaak Walton League, the Red Wing Wildlife League, the Chamber of Commerce, Lions Club, Junior Association of Commerce, Red Wing Technical Society and others swung into line. They formed the Hay Creek Committee with Commissioner Keye as chairman, and immediately set to work getting Hay Creek farmers to thinking along conservation lines.

"When you consider that this one little watershed covers 29,500 acres and includes 265 farms, you have an idea of the selling job we faced," points out Mr. Moore. "Of course, our immediate objective was developing a community forest on about 7000 acres. We figured 100,000 trees as a starter would be about right, but a million trees would be necessary before we finished."

Trees could be obtained at \$7 a thousand for conifers from the state-operated tree nursery. Hay Creek farmers were willing to buy the seedlings if labor were available. And that was where city neighbors in Red Wing came into the picture.

"We got the rank and file of Red Wing merchants and professional people to cooperate," explains County Agent Kunau. "For instance, we talked to the Kiwanis Club and asked for volunteers to plant the trees. They responded with enthusiasm. So did the other organizations we contacted. We designated April 28 as Hay Creek Valley Arbor Day, completed our plans, bought the trees, and set to work."

That first Arbor Day found about 525 men, boys and girls busily at work planting the little trees. Organized in thirty-six teams of from ten

to fifteen members, they planted 62,500 trees in a few hours. High school seniors—140 boys and girls—scrambled aboard buses and were whisked to planting sites. Red Wing retailers, doctors, lawyers and dentists closed their stores and offices to lend a hand. Furrows into which the seedlings were placed had been previously prepared by the land-owners.

As the Red Wing *Daily Republican-Eagle* pointed out the next day, this was only a start. "The planting of 62,500 trees on the slopes of the watershed today will provide only a small measure of relief," the newspaper stated. "It is estimated that upwards of a million trees should be planted to check excessive run-off of water. But city and county officials, farmers and businessmen who form the Hay Creek Valley Committee feel a constructive community program has really gone into action for the first time."

Back of this Arbor Day planting program was the idea that if townspeople get out on the land, they realize the seriousness of the erosion problem.

"We have made this an annual event," Dick Kunau stated. Another 62,000 trees were planted again last spring. "And we're very much encouraged about the progress we have made. We like to think of this as an 'about face' in attitude. It's a refreshing change from the 'let-the-government-do-it' psychology which had prevailed in the past."

Red Wing residents look confidently to the day when Hay Creek will be tamed — and through their own efforts, not those of government organizations.

Fire Dollar

(From page 10)

maps on pages 10 and 11. Briefly, it is that 427 million acres, or roughly two thirds of our forest area, now qualify for cooperative protection, a reduction of thirteen million acres since 1945. This is due primarily to redefining qualifying areas and to more accurate information on the extent and condition of forests in private ownership.

Of the present qualifying lands, all but seventy-one million acres are now under protection—a gain of sixty-three million acres since 1945, when 134 million were unprotected, 304 million protected. This would in-

dicate that unprotected lands are being brought under protection at the rate of twelve million acres a year.

Estimated cost of basic protection on 439 million acres of state and private lands in 1945 was \$32,000,000, or an average of better than seven cents an acre. The 1950 cost estimates for 426 million acres add up to \$48,000,000, or an average of ten and a half cents an acre. This does not necessarily reflect more intensive protection, however, as eighty percent of the estimated increase is required to meet rising costs of manpower, equipment and supplies—to

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duplicate today the 1945 standards of protection.

But what it will accomplish is more realistic distribution and application of the fire protection dollar. As the map on page 11 indicates, we now know what it will cost to achieve basic protection in all areas of the country. And since these estimates were made jointly by all agencies involved, they should prove workable.

As defined by the study, "basic" protection contemplates a normal or average level of organization for local protection units, which should be capable of statewide flexibility of operation to meet emergency fire situations. But it does not envision absolute maximum protection. Neither does it include all refinements of operation that may be instituted by local governments and private agencies to meet specific conditions or problems.

For example, it does not include the highly intensive protection applied to certain areas of southern California where massed population and great industrial expansion are desperately dependent upon healthy watersheds. It does not include refinements some Pacific Northwest industries, with millions of dollars invested in tree farms for future operations, find necessary to apply.

But in the opinion of federal and state foresters, responsible for the estimates, it will achieve protection "to an extent that will enable lands to provide continuous economic and social public benefits." And this, if accomplished on all state and private lands, will mark another milestone in the forward march of forestry in this country.

The big question now is the availability of funds. The federal government's share, as set by Congress, is \$9,000,000 which, when matched by state and private funds, will make available but \$18,000,000 of the \$48,000,000 required. The mystery of where the remaining \$30,000,000 is coming from remains unsolved—but the challenge is plainly to the individual states. In the past they have provided four dollars to the federal government's one in the cooperative effort. Whether this ratio can be continued as protection costs mount remains to be seen.

Meanwhile, Uncle Sam should step up his effort. Congress has authorized \$20,000,000 a year for cooperative fire protection—and a more realistic appropriation would put the nation much closer to the attainment of a safe degree of protection for its forest resources.



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This Month With The AFA

Annual Meeting in Wisconsin, October 9-11

Abandoning the conference room for its 69th annual meeting, the AFA will concentrate on "grass roots" tours through the autumn woods of northern Wisconsin to see and hear about conservation's progress in that section of the Lake States. Dates for the three-day meeting are October 9, 10 and 11, with headquarters at Eagle River, in the heart of Wisconsin's nationally famous lake and resort country.

This area was famous for its vast stands of virgin white pine until it was so thoroughly logged and burned off as to be written off the books. The intervening years have seen the birth and growth of a far-seeing conservation program. Fire prevention and control was the first step, followed by the Wisconsin Zoning Law, tree planting and other forestry development in an ever increasing tempo on county, state, federal and industrial levels. More recently has been the harnessing of the Wisconsin River.

During this first AFA meeting to be held in Wisconsin in the past thirty years, members will be escorted on tours to see the privately developed Wisconsin River system, known as "the hardest working river in America;" portable pulpwood chipper in action; a fish hatchery; a nursery operation; various types of forest plantations and operations on private, state and federal projects; recreational developments; Wisconsin's newly inaugurated aerial forest survey; deer concentration areas; yeast manufacturing for cattle feed—a new development of the pulp and paper industry; and the Trees for Tomorrow, Inc., conservation camp and museum.

Alternate trips will be arranged to the U.S. Forest Products Laboratory at Madison, and to the Paper Research Institute at Appleton. Still other interesting phases of the program are being developed.

The meeting is in charge of a special committee headed by Folke Becker, president of the Rhinelander Paper Company, and an honorary vice-president of the AFA. He is being assisted by Ernest Swift, director of the Wisconsin Conservation Department;

D. C. Everest, chairman of the board of the Marathon Paper Corporation; Vico Isola, assistant regional forester for the U.S. Forest Service; and M. N. Taylor, executive director of Trees for Tomorrow, Inc. Special local committees will handle other arrangements and details.

AFA's Insect and Disease Committee has now been completed under the chairmanship of Thomas J. Page of WNBC, New York, and includes Dr. John S. Boyce of Yale University; Dr. K. Starr Chester, supervisor of the Battelle Memorial Institute at Columbus, Ohio; Stanley G. Fontana, deputy director of the Michigan Department of Conservation; Representative John McSweeney from Ohio; Clyde S. Martin of the Weyerhaeuser Timber Company, Washington, and Fairfield Osborn, president of the Conservation Foundation, New York.

The committee held its first course-charting session in May, exploring a number of channels along which it will proceed.

The AFA is fortunate in having such distinguished and capable men associated with this committee. They are enthusiastic about the job ahead and its tremendous possibilities.

"The American Forestry Association long led the battle for adequate control of forest fires," said Clyde Martin, "It is very fitting that it should now take the lead in insect and disease control."

The West's bug attacks in spruce stands of national forests and national parks in Colorado, Idaho and Wyoming have reached epidemic proportions, with an estimated \$122,000,000 in commercial timber at stake. In Colorado forests and parks alone, 800 thousand trees are reported to be infested with bark beetles.

This destruction, if permitted to run its course, can have serious effects on industrial forest utilization in future years, to say nothing of scarring the great scenic gems of

Rocky Mountain, Grand Teton and Yellowstone national parks. Like a cancerous growth, these infestations can spread to other federal and private lands.

Federal foresters have estimated that immediate control measures will cost \$3,095,000, which is being asked of Congress as an urgent deficiency appropriation, with the support of The American Forestry Association and other organizations. Many congressmen have indicated their belief that the money should be provided.

The bark beetle control measures planned by federal scientists involve the use of orthodichlorobenzene mixed with fuel oil. Individual trees will be sprayed, according to Charles Melichar of the U.S. Forest Service. This will be quite an operation using tank trucks, hose lines and power sprayers where roads are available. In remote canyons and along ridges the job will be done by men using back-pack pumps.

Melichar states that the insecticide is harmless to wildlife—also that a mixture of DDT and fuel oil sprayed from planes in Oregon and Washington to combat spruce budworm has been tested as harmless. The government uses for each gallon of solution a pound of DDT and the balance fuel oil. A gallon treats an acre.

AFA's forest progress report, covering what has happened in American forestry during the last five years, is now being assembled by the task force committees under Ovid Butler. We have had a chance to see some of George Duthie's figures on tree planting—figures that reveal the area planted in 1949 was two and a half times greater than in 1945. About a third of a million acres were planted to tree seedlings last year. It's encouraging to find that tree planting has been stepped up year by year.

In Wisconsin last month, in company with M. N. Taylor, head of Trees for Tomorrow, Inc., Vico Isola, assistant regional forester of the U.S. Forest Service, and several others, we saw some of the results of that state's huge reforestation program. Industry has joined hands with federal and state agencies for many years now to put idle lands back to work, and what shows up from the highways is encouraging. The great surge of forestry and other lines of conservation are to be studied and inspected by AFA'ers at the annual meeting this fall. S. L. F.

Forestry Chairman

(From page 43)

should be exercised locally. It is the function of the central bureau to encourage county boards to do a progressively better job every year. It is a function of the county boards to protect the democratic administration of Sweden's forestry laws and to maintain a high degree of authority in the hands of the local citizens most affected by regulations.

Late Sunday evening as we boarded the last train for Stockholm, I could not help thinking how far Sweden had come in getting good forestry practice on all its forest lands. This progress has been made by relying heavily on the fairness, good judgment and patriotism of the men selected to protect Sweden's second most important raw material. If the majority of them are of Carl Klingberg's caliber, that reliance seems to me to be well placed.

The current forestry law in Sweden has not led to perfect silviculture, nor has it prevented a decline in volume of sawtimber-sized trees. But it has met with general support. And it has created an understanding of forestry in the minds of most timberland owners, and it is gradually improving both the yield and genetic make-up of Sweden's forests. One wonders if a centralized system could be equally effective.

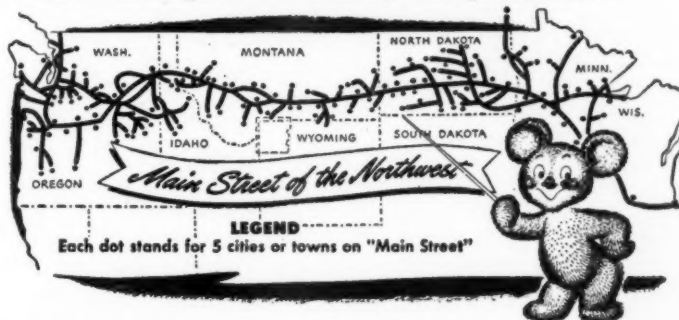
AUTHORS

RUTH E. HOPSON (*Collier Glacier—Year by Year*) writes from Eugene, Oregon. **MARGARET I. JARDINE** (*Grand Canyon of the East*), a landscape architect, writes from Shirley, Massachusetts. **ROBERT MILLER** (*A Tree for a Tree*) was employed by the Crossett companies last year as executive trainee. **EDWARD RITTER** (*A Westerner Looks at Maine*) is forester with the U. S. Forest Service at Philadelphia. **HAROLD SEVERSON** (*Red Wing Cures Its Headache*) is a Minnesota writer. **GRACE V. SHARRITT** (*How Many Elk?*), well-known writer, headquarters at Jackson, Wyoming. **HARDY L. SHIRLEY** (*County Forestry Chairman*) is assistant dean of the New York State College of Forestry at Syracuse University. **FRED B. TRENK** (*Managing Your Woodlands*) is extension forester at the University of Wisconsin, Madison.

593 Reasons why they call it "Main Street of the Northwest"



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FOREST FIRES CAN BE PREVENTED IF YOU WILL
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2. Crush out your cigarette, cigar, pipe ashes. Use an ash tray!
3. Drown your campfire, then stir and drown again
4. Ask about the law before burning grass, brush, fence rows, or trash.

The Fire Problem Shakes Down

The recent area-cost study by the U. S. Forest Service (see page 10) should give a boost in morale to those struggling with our perennial forest fire problem, but it also raises some interesting questions. For instance, it establishes the happy fact that unprotected state and private forest lands are being reduced at the rate of twelve million acres a year, that if this rate is continued all important forest and critical watershed areas in this country will be under some form of protection in six or seven years. But are these gains, as encouraging as they are, stopping fires, reducing fire damage? Again, the study clearly indicates that we are refining our knowledge of what it takes in dollars and cents to apply basic protection. But unanswered is the question of where the money is coming from.

For understandable reasons, the study was not concerned with these questions. Its purpose was to determine the condition and extent of state and private forest lands qualifying for cooperative federal-state protection—and to establish present-day costs of providing basic protection to these lands. In other words, to shake down our major fire problem to a clear-cut blueprint for action.

Here, briefly, is the situation. Protected lands now aggregate 356 million acres, with seventy-one million still in need of protection. The estimated yearly cost of applying basic protection to these 427 million acres, roughly two thirds of our total forest area, is \$48,000,000, or an increase of \$16,000,000 since the last comparable study was made in 1945. Or put another way, because of mounting costs—for manpower, equipment, supplies, etc.—we must today spend ten and a half cents an acre to provide the same standard of protection that cost only seven cents in 1945.

This is the hard core of our present-day fire protection problem. The question now is our ability to deal with it. Looking back, in 1937, with 258 million acres under protection, cooperative expenditures amounted to \$7,000,000, or less than three cents an acre. In 1942, the figure was \$11,000,000 for 291 million acres, or less than four cents an acre. In 1947, with 332 million acres under protection, we spent six cents an acre, or \$20,000,000.

With the exception of 1947, when it made available \$8,000,000, the federal government's contribution has been around one dollar to every four provided by state and private sources. The present federal appropriation is but \$9,000,000. Thus, unless Congress raises the government's ante, and it is authorized to spend up to \$20,000,000 a year for this purpose, state and private funds aggregating \$39,000,000, or about double the total 1947 expenditures, will be in order.

The significance here should be clearly understood. If the states can maintain the four to one ratio under the pressure of constantly rising costs, basic protection for all cooperative lands may be achieved. If the cost burden proves too heavy, not only will nationwide protection fall short, but standards of protection may decline also.

The least that can be expected of Congress, we believe, is that it contribute—and now—a full quarter of the total burden, or \$12,000,000, and that when and as needed, it apply the full weight of its total authorization. With such high stakes involved, it would be tragic to achieve nationwide protection only to be forced, by short-sighted economy, to reduce protection standards.

In fact, it might well be asked here whether or not present standards are materially reducing the number of fires and fire damage. Let's again turn to the record.

Using the same sample years, and including both unprotected and protected lands, 176,000 fires in 1937 caused damage estimated at \$20,000,000; in 1942 the damage was \$44,000,000 from 198,000 fires; in 1947 it was \$52,000,000 from 192,000 fires.

Considering only lands under protection, in 1937, when we were spending less than three cents an acre, fires numbered 54,000 for an estimated loss of \$2,000,000. In 1942, spending four cents an acre, there were 76,000 fires for a \$10,000,000 loss. In 1947, with six cents an acre, the score was 71,000 fires, estimated damage \$21,000,000.

At first glance, here is a baffling situation. While it is clear that the great bulk of fires is on unprotected land, and that as these areas are brought under protection both fire numbers and damage decline, the fact remains that up through 1947 both number and damage figures were increasing.

The truth, of course, is that these figures fail to tell the whole story. To begin with, the system of reporting fires and of appraising fire damage is being refined, year by year. More fires are being reported. At the same time, timber values have skyrocketed. Then we must take into account that most forest areas are being subjected to increasingly heavy use. As an example, the number of licensed hunters has more than doubled since 1937 to a present-day total of thirteen million.

Yet there is no denying the fact that while we are putting more bulldozers, radio cars and better trained manpower in the woods, we are not appreciably stopping fires, or reducing fire damage. And the most plausible answer to this is that, at the moment at least, there is no sure-shot serum against the virus of man-caused fires.

It is true, of course, that normally changes in national habits, good or bad, take place slowly and often imperceptibly. But it is also true that, if man-caused fires are to be contained, the quicker we realize the steps we must take and act upon them the better it will be, because our answers can have an important bearing upon the immediate future.

More intensive and realistic public education is necessarily the first step. The evil of carelessness and indifference can be avoided, we believe, if the average citizen can be made to consult his own interest in fire prevention instead of letting others do his thinking for him. The second essential step is to put teeth into state forest fire laws, where needed—and then use them.

Instead of lining up at the wailing wall over repeated violations, citizens should insist that laws be enforced, not evasively or timidly, as is generally the case now, but with resolve and efficiency.

Nine out of every ten fires, year in and year out, are caused by careless or willful acts. Yet last year there were less than 7000 prosecutions.

The answer is clear. If taxpayers and landowners are called upon to invest millions of dollars in fire control, they must be protected by the maximum effort to enforce fire laws. This responsibility rests upon the individual states. And the stake is great.

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I rushed back in my store and got one of your **INDIAN FIRE PUMPS** and in no time at all had the fire out. Someone called the fire department, but I had the fire out before they arrived.

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